वार्षिक प्रतिवेदन

Annual Report 2014-15

ICAR-CIFE

Mumbai - India

वार्षिक प्रतिवेदन

Annual Report 2014-15

ICAR-Central Institute of Fisheries Education

(University Under Sec.3 of UGC Act

Indian Council of Agricultural Research

Off Yari Road, Andheri (W), Mumbai - 400061

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Chapter 1

Preface

I am pleased to present the Annual Report of the Institute for the year 2014-15, a literally eventful year in the tradition of excellence in academics, research and outreach. Being one of the top Agricultural Universities, it continues to be the most preferred destination for fisheries graduates from across India and the Afro-Asian countries. It was a moment of elation when CIFE's path breaking research intervention, shrimp farming technology for inland saline areas was honoured with the *Innovation Award* from the Punjab State Council for Science and Technology, Govt. of Punjab. Twelfth Convocation of the University was held on 7th November 2014 which was graced by Shri Radha Mohan Singh, Hon'ble Union Minister for Agriculture as Chief Guest and 142 MFSc and 17 PhD students were awarded their degrees. As part of NAAS Silver Jubilee Celebrations, CIFE hosted several symposia, brain storming sessions and workshops, and came out with fruitful ideas and strategies to fuel the development of fisheries and aquaculture during the next two decades. CIFE scholars continue to corner most of the ARS and AP placements in the NARS while making their presence felt across the globe through participation in many international conferences and prominent labs.

Like every year, many of our faculty and student scholars were recognised for their outstanding work in the form of prestigious awards like Bharat Ratna Dr. C. Subramaniam award for Best Teacher of ICAR, Jawaharlal Nehru award of ICAR for Outstanding Doctoral Thesis, Full Bright Fellowship, CLFMA Lifetime Achievement Award, Best paper presentation awards in international fora, etc. The academic programs of the University got a major fillip with signing of MoUs with two reputed overseas Universities namely Auburn University of USA, and Curtin University of Australia.

Flagship research programs and National Network programs yielded significant outcomes. Development of bicistronic DNA vaccine construct against *E. tarda*, utilisation of sewage to culture ornamental fish food organisms, DNA barcoding of selected fishes from Indian waters, development of fluorescent whole cell optical fibre biosensor for heavy metal pollutants, National Surveillance Programme for Aquatic Animal Diseases, development of fish products fortified with aquatic nutraceuticals were some of them. The Institute's patent portfolio expanded with four more patents this year, while 113 research papers were published in high impact international journals.

The institute's unrelenting development and outreach efforts gained momentum with special focus on fisher(ies) development in tribal dominated areas and the North Eastern Hill region. Several awareness campaigns, exhibitions and skill development programs were conducted in the States of Arunachal Pradesh, Mizoram, West Bengal, Maharashtra, Bihar, Haryana and Andhra Pradesh, benefitting more than 6000 farmers and fishers. CIFE's flagship programme "Successful demonstration of *L. Vannamei culture in ground saline water*" has led to commercial scale adoption by farmers in Haryana and Punjab. In few years, this technology could become a game changer in the agrarian landscape of North West India.

Building on the world-class infrastructure, new state-of-the-art facilities like Ornamental Fish Aquarium, Cell Culture Lab, Centralized Instrumentation Lab, Indoor Sports and Gymnasium complex, Trainees hostel were created at the main Campus and Centres to boost the R&D productivity. Establishment of Radio Ecology Lab has been created as one of its kind national facility to study the effect of radiation on aquatic eco-systems.

The letter of appreciation received from the Parliamentary Standing Committee on Agriculture, after their visit and review of CIFE's activities, was like a crown on the University. In the pursuit of excellence, the constant support, guidance and immense encouragement provided by Hon'ble Union Minister for Agriculture Shri Radha Mohan Singh ji and the Hon'ble MoS, Shri Sanjeev K. Balyan and Secretary, DARE and D.G., ICAR Dr. S. Ayyappan is gratefully acknowledged. We are thankful to Dr. B. Meenakumari, DDG (Fy), Dr. S. D. Singh, ADG (Inland Fisheries), Dr. Madan Mohan, ADG (Marine Fisheries) and other colleagues from the Fisheries Division for their co-operation and support. My sincere thanks are due to the Members of Board of Management, Chairman and Member of Research Advisory Committee and Members of Academic Council for their cooperation and support. My special thanks are due to all the colleagues, staff and students for their inputs and the publication team for bringing out this Annual Report.

(W.S. Lakra)

Chapter 2

Executive Summary

Executive Summary

Gloom descended on the CIFE parivar with the demise of Prof. (Dr.) Hiralal Chaudhury (Father of Indian Fish Breeding) on 12th September, 2014. Keeping his contributions in mind the institute continued its efforts in leaving its footprints in the development of fisheries particularly in the north-eastern regions.

Institute conducted its XII convocation during which 139 M.F.Sc and 19 Ph.D degrees were awarded along with 28 Gold Medals to different meritorious students by Shri Radha Mohan Singh, Hon'ble Union minister of Agriculture, Govt. of India. During the current year no of successful candidates for M.F. Sc and Ph.D were 73 and 27, respectively. Like previous years 3 overseas students enrolled for Ph.D (2) and Master programme (1) from the African countries. Two foreign students completed their post doctoral research one was from Nigeria and other from Egypt. One Ph.D scholar won the Jawaharlal Nehru award for outstanding Doctoral thesis. Five students participated in international conferences abroad and presented papers out of which one student won the best oral presentation award. The institute with unrelenting efforts conducted fisheries development programmes for the North eastern hilly regions. A two day Training-cum-Workshop was organized on Aquaculture and Fisheries Management for Food and Nutritional Security in Arunachal Pradesh and Two day Training-cum-Workshop was organized on Aquaculture and Fisheries Management for Food and Nutritional Security in Mizoram. A refresher course on Fisheries and Aquaculture Development for Officers of the NEH States for officers of the NEH States was also conducted apart from awareness-cum-workshop on fish milt cryopreservation technology at Department of Fisheries, Mizoram, Aizawl. An entrepreneurship development program for fish farmers at the AAU, Jorhat for NEH region with emphasis on integrated farming system for improved and diversified livelihood opportunities for small and marginal farmers was also organized. The research team in Rohtak centre was successful in developing technology for Shrimp farming using Inland salinewater for which the institute won the Innovative award from the Punjab State Council for Science and Technology, Govt. of Punjab.

Presently the institute has 32 institutional and 18 externally funded projects. Development of fish products fortified with aquatic nutraceuticals, Development of bicistronic DNA vaccine construct against Edwardsiella tarda, Utilisation of sewage to culture ornamental fish food organisms, DNA barcoding of selected fishes from Indian, Development of fluorescent whole cell optical fibre biosensor for heavy metal pollutants, Livelihood and nutritional security of tribal dominated areas through integrated farming system and technology models, National Surveillance Programme for Aquatic Animal Diseases, Studies on baseline marine radioecology and biodiversity around nuclear power plant site being few of them. Up-scaling, demonstration and diversification of technologies for finfish and shellfish in inland saline soils is in progress at Rohtak centre. Selective breeding programmes of Magur continued at the freshwater fish farm at Balabhadrapuram. Four patents were filed during the year pertaining to Fadrozole loaded nanoparticle feed, fish drying racks, reclamation of salt affected sugarcane fields through sub-surface drainage system and aquaculture and catfish hatchery and rearing of seed under three tier system.

A total of 50 short-term training programmes were organized at the headquarter and the four research centers in which ___ participants were imparted skill in various aspects of aquaculture. Ten farmers meet/awareness programmes, 4 exhibitions, 6 transfer of technology, 4 tribal development programme for tribals from Maharashtra and West Bengal, 14 radio talks, 9 exposure visits were organised during the year under the extension mandate. A two-day "Matsya Utpadan Hetu Kisan Mela" was organized at Motihari, Bihar in which 5000 farmers participated.

Three faculty attended conferences in abroad namely in Spain, Srilanka and Rome. A total of 8 workshops/conferences were held during the year. National symposium on Indian Fisheries and Aquaculture: 25 years of achievement and way forward and the Agriculture University Vice – Chancellors Meet – Brainstorming Session on Challenges before NARS in National Food production being one of them. Four CAFT training programmes were organised. Five training –cum-workshops were held for the NEH region. The faculty attended__workshops/symposia/ meetings etc. and 16 training programmes.

A total of 168 research papers were published in refereed journals with high impact factor. Out of which 111 were in international journals and 57 national. Apart from this, a number of review papers, popular articles, books, book chapters and bulletins were also published during the year.The meetings of IRC, RAC, BoM, Academic Council and Extension Council were held as per schedule.

Some state-of-the-art infrastructure was added in this year which include, Cell culture laboratory and indoor sports and gymnasium complex at CIFE, Mumbai. The institute also participated in the Swachhatha aabhiyan programme. The Peer review accreditation team and the parliamentary committee also visited the institute.

Chapter 3

Introduction

3.1. Introduction

CIFE was establshed with the assistance of UNDP in 1961 to promote fisheries education in the country by training officials from state governments. It was initially under the administrative control of Ministry of Agriculture, Govt. of India and subsequently transferred to ICAR (Indian Council of Agricultural Research) in 1979. The mandate of the institute were widened to include higher fisheries education, research as well as extension education under its functional fold. Recognizing the pivotal role played by the Institute in Human Resources Development in fisheries, the Institute was accorded the status of Deemed-to-be-University in March, 1989. The institute has emerged as a centre of excellence in HRD not only with state-of-the-art facilities and laboratories but by producing competent manpower who have been securing top ARS positions besides joining national and international organizations. The institute has also been deeply engaged in orienting, grooming and preparing the professionals from the Afro-Asian countries in fisheries and aquaculture sector.

CIFE Academic Building

Mandate

- To conduct post-graduate academic programs in core and emerging disciplines of fisheries science.
- To conduct basic and strategic research in frontier areas of fisheries.
- To conduct training programmes in demand-driven and upstream areas for different stakeholders of fisheries sector.
- To provide technical assistance, inputs for policy development and consultancy services.

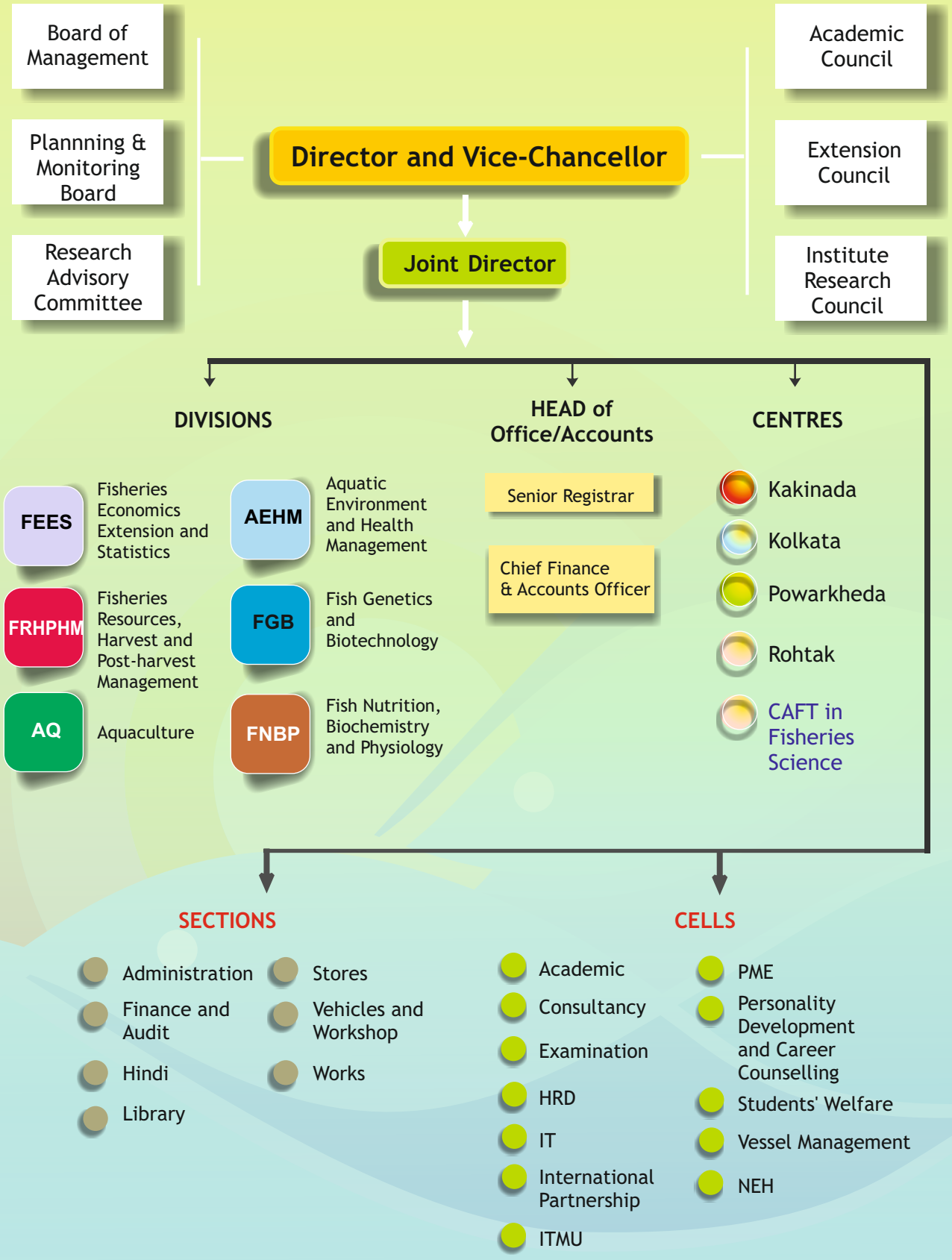
Vision

To be a world-class organisation providing leadership in fisheries education and research

Mission

To achieve academic and research excellence

3.2. Organogram



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Director, CIBA
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Member Secretary
G. R. Deshbandhu

3.3. Staff Position (2014-15)

Category Wise

CIFE Staff	Sanctioned	In position	Vacant
RMP	2	2	00
Scientific	104	80	24
Technical	106	87	19
Administrative	64	47	17
Skilled Supporting	70	65	05
Non Ministrial	01	01	00
Total	347	282	65

3.4. Budget (2014-15)

(Rs. In Lakh)

S. No.	Head	Sanctioned	Received	Expenditure Incurred
1.	Plan	1275.00	1275.00	1152.58
2.	Non-plan	4164.92	3904.00	3963.41
	Total	**5439.92**	**5179.00**	**5115.99**

S.No.	Head	Balance C/f	Received	Expenditure Incurred
3.	CAFT	0.38	19.82	12.11
4.	SDU	35.76	279.24	125.69
5.	Externally Funded Projects	478.34	262.47	338.37
	Total	**514.48**	**561.53**	**476.27**

Revenue generation (Rs. In Lakh)

Target : Rs. 135.20 Achieved: Rs. 105.76

Chapter 4

Educational Achievements

4.1. CIFE Celebrates its XII Convocation on 7 November 2014

XII Convocation of ICAR- Central Institute of Fisheries Education, Mumbai was held on 7th November, 2014. Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture, Govt. of India was the chief guest of the function. Hon'ble Minister awarded gold medals to 28 students for their academic excellence. In his convocation address he congratulated the students for getting their degree from the prestigious institute and highlighted the importance of fisheries education for the development of the country. He urged the students to develop entrepreneurial skills and to become job providers rather than job seekers. He also highlighted the role of fish in human nutrition and reiterated the resolve to facilitate a 'Blue Revolution' emphasized by the Hon'ble Prime Minister to increase the fish production to meet the challenges of providing quality protein to the growing population and to fight malnutrition. Hon'ble Minister also inaugurated the Indoor Sports and Gymnasium Complex at CIFE.

Dr. S. Ayyappan, Secretary, DARE & Director General, ICAR, presided over the function. In his address he congratulated all the awardees and thanked the parents of the students for sending their wards for fisheries education. He lauded the efforts of Hon'ble Minister for his involvement at grass-root level for the development of all the sectors of agriculture.

Dr. Bharati Lavekar, Hon'ble MLA, Govt. of Maharashtra was the Guest of Honour.

Dr.W.S. Lakra, Vice-Chancellor, CIFE welcomed the dignitaries and presented the University report. He conferred 139 students with M.F.Sc degree and 19 students with Ph.D. degree in various disciplines of fisheries sciences.

Dr.A.K. Pal, Joint Director, CIFE proposed the vote of thanks.

4.2. Results

Discipline-wise number of passed-out students is as follows:

Name of the Programme	No. of successful candidates
Ph.D.	
Aquaculture (AQC)	13
Fish Biotechnology (FB)	01
Fisheries Business management (FBM)	01
Fish Pathology Management (FPM)	02
Fisheries Resource Management (FRM)	06
Post-Harvest Technology (PHT)	01
Fisheries Extension	02
Aquatic Animal Health (AAH)	01
Total	**27**
M.F.Sc. (2012-14)	
Aquaculture (AQC)	12
Aquatic Animal Health Management (AAH)	07
Aquatic Environment and Management (AEM)	06
Fish Biotechnology (FBT)	06
Fish Genetics and Breeding (FGB)	04
Fish Physiology and Biochemistry (FPB)	06
Fisheries Economics (FEC)	05
Fisheries Extension (FEX)	05
Fish Nutrition and Feed Technology (FNT)	06
Fisheries Resource Management (FRM)	08
Post-Harvest Technology (PHT)	08
Total	**73**

4.3. Enrollments during the year 2014-2015

Ph.D. (Batch 2014-2017)

Sr.No.	Name of the Programme	No. of candidates enrolled
1.	Aquaculture (AQC)	14
2.	Aquatic Animal Health Management (AAH)	06
3.	Aquatic Environment & Management (AEM)	04
4.	Fish Biotechnology (FBT)	04
5.	Fish Genetics & Breeding (FGB)	04
6.	Fish Physiology & Biochemistry (FPB)	02
7.	Fisheries Economics (FEC)	02
8.	Fisheries Extension (FEX)	05
9.	Fish Nutrition & Feed Technology (FNT)	04
10.	Fisheries Resource Management (FRM)	10
11.	Post Harvest Technology (PHT)	06
	Total	**61**

M.F.Sc. (Batch 2014-2016)

Sr.No.	Name of the Programme	No. of candidates enrolled
1.	Aquaculture (AQC)	12
2.	Aquatic Animal Health Management (AAH)	08
3.	Aquatic Environment & Management (AEM)	06
4.	Fish Biotechnology (FBT)	06
5.	Fish Genetics & Breeding (FGB)	06
6.	Fish Physiology & Biochemistry (FPB)	06
7.	Fisheries Economics (FEC)	05
8.	Fisheries Extension (FEX)	06
9.	Fish Nutrition & Feed Technology (FNT)	06
10.	Fisheries Resource Management (FRM)	09
11.	Post Harvest Technology (PHT)	07
	Total	**77**

Foreign students

- Two foreign students are pursuing their post-doctoral research in the Fish Nutrition, Biochemistry and Physiology division. One is from Nigeria and another from Egypt.
- This year 2 foreign students one from Sudan and one from Sri Lanka enrolled for doctoral programme and one from Sri Lanka in masters.

4.4. List of dissertations submitted by M.F.Sc. students during the year 2014-2015

S. No.	Name of the Student	Title	Major Guide
Fisheries Resource Management (FRM)			
1	Mr. Rajan Kumar FRM-MA2-01	A taxonomic study of family Ariidae from Indian waters	Dr A.K. Jaiswar
2	Mr. Bhendekar Santosh Nagnath	Study on the participatory gis in trawl fisheries along the Mumbai coast	Dr Latha Shenoy
3	Mr. Tarachand Kumawat FRM-MA2-04	Study on compliance of bag net fishery of Maharashtra coast, India with provisions of FAO CCRF	Dr Latha Shenoy
4	Mr. Manik Datta FRM-MA2-05	Study of trophic dynamics and Fisheries potential of lake Rudrasagar, Tripura	Dr Geetanjali Deshmukhe
5	Mr. Surendra Kumar Ahirwal FRM-MA2-06	Studies onbiology of oil sardine, *Sardinella longiceps* (Valenciennes, 1847) from Mumbai waters	Dr S.K. Chakraborty
6	Mr. Shravan Kumar Sharma FRM-MA2-07	Taxonomic evaluation of family Cynoglossidae from Indian waters	Dr A.K. Jaiswar
7	Ms. Shikha Rahangdale FRM-MA2-08	Biology of white sardine, *Escualosa thoracata* (Valenciennes, 1847) from Mumbai waters	Dr S.K. Chakrborty
8	Mr. Pranab Gogoi FRM-MA2-09	Biology of *Ailia coilia* (Hamilton-Buchanan,1822) from river Brahmaputra, Assam, India	Dr S.K. Chakraborty
Aquaculture (AQ)			
9	Mr. Satya Prakash AQC-MA2-01	Optimization of stocking density and evaluation of different feeds for *Channa striatus* (Bloch, 1793) fry	Dr V.K. Tiwari
10	Mr. Biju I.F. AQC-MA2-02	Comparative evaluation of growth and immune parameters of stunted and normal yearlings	Dr Chandra Prakash
11	Mr. Irshad Ahmad Hajam AQC-MA2-03	Effect of bioflocs on growth performance and immune response of *Labeo rohita* (Hamilton, 1822)	Dr A.K. Verma
12	Mr. Sanjit Debbarma AQC-MA2-05	Effect of ration restriction and re-alimentation on compensatory growth of *Cyprinus carpio* (Linnaeus, 1758)	Dr Babitha Rani A.M.
13	Mr. N. Bishwajit Singh AQC-MA2-06	Effect of biofilm on water quality, growth and immune response of *Labeo rohita* (Hamilton, 1822)	Dr Neelam Saharan
14	Mr. Mitesh H. Ramteke AQC-MA2-07	Culture of *Macrobrachium rosenbergii* (De Man 1879) in floating net cages in freshwater eutrophic lake at different stocking densities	Dr Kiran Dube Rawat
15	Ms. Misha S. AQC-MA2-08	Effect of temperature on the embryonic development and hatching efficiency of marine ornamental fish *Amphiprion ocellaris* (Cuvier, 1830) under captive condition	Dr N.K. Chadha

16	Mr. Marbate K. Tukaram AQC-MA2-10	Effect of varying dietary protein, their graded levels and fatty acids on the growth performances of *Osteobrama belangeri* (Valenciennes, 1884)	Dr A.K. Reddy
17	Ms. Sangeeta Kumari AQC-MA2-11	The effect of feed and feeding on survival and size heterogeneity in striped snakehead *Channa striatus* (Bloch, 1793) fingerlings	Dr V.K. Tiwari
18	Ms. Ratnamanjari Sahoo AQC-MA2-12	Comparative studies on alum and vinegar application for the control of aquatic weeds	Dr Chandra Prakash
19	Ms. K.K.T. Nawansi AQC-MA2-13	Polyculture of goldfish (*Carassius auratus,* Linnaeus1758) and koi carp (*Cyprinus carpio var* koi, Linnaeus, 1758) under aquaponic system	Dr A.K. Verma
20	Mr. Alakesh Das AQC-MA2-14	Techno-economic evaluation of enclosure culture technology in selected floodplain wetlands (Beels) of Assam	Dr Paramita B. Sawant
Post Harvest Technology			
21	Mr. Joshikumar Khangembam PHT-MA2-01	Physicochemical and sensory characteristics of fish surimi cubes in curry medium under retort conditions	Dr. G. Venkateshwarlu
22	Mr. Raushan Kumar PHT-MA2-02	Utilization of *Acetes* in development of ready-to-eat functional extruded snacks	Dr. G. Venkateshwarlu
23	Md. Aman Hassan PHT-MA2-03	Exploration of *Pangasius sp.* as a resource for surimi production and its storage stability at low temperature	Dr A.K. Balange
24	Ms. Vandita PHT-MA2-04	Diversity of *Salmonella enterica* associated with seafood	Dr. Sanath Kumar H.
25	Mr. Asem Sanjit Singh PHT-MA2-05	Prevalence of extended spectrum - lactamase (ESBL)-producing enterobacteria in sea food	Dr Sanath Kumar H.
26	Ms. Namita Kumari PHT-MA2-06	Development of ready-to-eat *Pangasius* steaks by improved *sous-vide* process	Dr. G. Venkateshwarlu
27	Ms. Oishi Das PHT-MA2-07	Prevalence of norovirus in seafood and its environment	Dr B.B. Nayak
28	Ms. Okuba Isoac Tikue PHT-MA2-08	Effective utilization of oil sardine (*Sardinella longiceps*) for surimi and fish oil production by different washing methods	Dr A.K. Balange
Fish Genetics & Breeding (FGB)			
29	Mr. Ratnadeep Saha FGB-MA2-01	Effect of nano-conjugated 17-methyltestosterone on the testicular development of *Clarias batrachus* (Linnaeus, 1758)	Dr Rupam Sharma
30	Mr. Irfan Ahmad Bhat FGB-MA2-02	Identification & characterization of sox9 gene in *Clarias batrachus* (Linnaeus 1758)	Dr Rupam Sharma

31	Mr. Dinesh S. FGB-MA2-03	A genetic study on body colour and fin length inheritance in guppy, *Poecilia reticulata*	Dr Shrinivas Jahageerdar
32	Mr. Rameez Roshan FGB-MA2-05	Genetic diversity analysis of *Clarias batrachus* (Linnaeus, 1758) from different geographical locations	Dr Gopal Krishna
33	Mr. Dharmadurai C. FGB-MA2-06	Analysis of growth pattern in different stocks of *Clarias batrachus* (Linnaeus, 1758)	Dr Gopal Krishna

Fish Biotechnology

34	Mr. Sujit Kumar FBT-MA2-01	Idetification of selected tri-nucleotide simple sequence repeats in *Clarias batrachus*	Dr Aparna Chaudhari
35	Mr. Yambem Suresh Singh FBT-MA2-02	Idetification of selected tetra nucleotide simple sequence repeats in *Clarias batrachus*	Dr Annam Pavan Kumar
36	Mr. Sadurudeen N. FBT-MA2-03	DNA Barcoding of selected Perciformes fishes from Indian coast	Dr Annam Pavan Kumar
37	Mr. Aman Divakar FBT-MA2-04	Identification of full length coding region of selected reproduction-related genes in *Clarias batrachus* (Linnaeus, 1758)	Dr P. Gireesh Babu
38	Mr. Mukesh Kumar FBT-MA2-05	Genetic characterization of *Clarias batrachus* stocks by tri-nucleotide micro satellite markers	Dr C.S. Chaturvedi
39	Mr. Deepak Agarwal FBT-MA2-06	SNP mining in selected housekeeping genes of giant freshwater prawn *Macrobrachium rosenbergii* (De Man 1879)	Dr Aparna Chaudhari

Aquatic Animal Health Management (AAH)

40	Mr. Raja Aadil Hussain Bhat AAH-MA2-01	Characterisation of melanoma differentiation associated gene (MDA 5), a retinoic acid inducible gene I (RIG-I)- like receptor of *Etroplus suratensis*	Dr K.V. Rajendran
41	Ms. Mira Paul AAH-MA2-02	Antibacterial and immunomodulatory effects of silver nanoparticles (AgNPs) in *Labeo rohita*	Dr C.S. Purushothaman
42	Mr. Syed Shariq Nazir Qadiri AAH-MA2-03	Assessment of mucosal immune response in *Cirrhinus mrigala*	Dr M. Makesh
43	Ms. Pooja Kanyal AAH-MA2-04	Expression studies of pluripotency genes from different tissues of *Carassius auratus*	Dr Gayatri Tripathi
44	Mr. RanjeetaKumari AAH-MA2-05	Response of *Labeo rohita* to DNA vaccine against *Edwardsiella tarda*	Dr Megha K. Bedekar
45	Mr. Jackson Debbarma AAH-MA2-06	Immunomodulatory and antibacterial effect of allicin derived from *Allium sativum* against fish pathogenic bacteria in koi carp (*Cyprinus carpio*var. koi.L.)	Dr R.P. Raman
46	Mr. Anirban Paul AAH-MA2-07	Antibacterial and immunomodulatory effect of silver nanoparticles (AgNPs) in *Labeo rohita*	Dr Gaurav Rathore

47	Mr. Chinmayee Muduli AAH-MA2-08	Isolation and molecular identification of *Aeromonas spp.* in freshwater ornamental fishes	Mr Kundan Kumar

Aquatic Environmental Management (AEM)

48	Mr. Parvaiz Ahmad Ganie AEM-MA2-01	Evaluation of Acetylcholinesterase as a potential biomarker in *Cirrhinus mrigala* (Hamilton, 1822) in response to cypermethrin	Dr P.K. Pandey
49	Mr. Sadokpam G. Singh AEM-MA2-02	Carbon sequestration in Thane creek mangrove ecosystem	Dr A. Vennila
50	Mr. Dar Jaffer Yousuf AEM-MA2-03	Characterization of sulphur-oxidizing bacteria in hot springs of Maharashtra	Dr A. Vennila
51	Mr. R. Vinothkumar AEM-MA2-04	Characterization of heterotrophic nitrifying – Denitrifying Bacteria in Aquaculture systems	Mrs. Vidya Shree Bharti
52	Mr. Pioneerres. R. Lyngdoh AEM-MA2-05	Arsenic(III) removal through column bed with physically entrapped algal materials	Dr S.P. Shukla
53	Mr. Kishore Kunal AEM-MA2-06	Toxicity of cypermethrin (CYP) in *Anabas testudineus* (Bioch, 1792)	Dr P.K. Pandey
54	Mr. Abdolhakim Ghodousiyan AEM-MA2-07	Assessment of accumulation levels of heavy metals (Cd, Hg, Pb and Cr) in economically important fish landed in Versova, Mumbai, India	Dr C.S. Purushothaman

Fisheries Economics (FEC)

55	Ms. Jyotirmayee Das FEC-MA2-01	Economic analysis and market share discrimination in marine fish production, Odisha	Dr M. Krishnan
56	Mr. Naorem Dinesh Singh FEC-MA2-02	Economics and institutional arrangements for financing fisheries development in North East India	Dr M. Krishnan
57	Mr. Navghan V. Mahida FEC-MA2-04	Value chain analysis of farmed shrimp in Gujarat	Dr Nalini Ranjan Kumar
58	Ms. Hoilenting FEC-MA2-05	An analysis of fish consumption pattern in rural and urban areas of Manipur	Dr Rama Sharma
59	Mr. Dhammapal J. Gadkar FEC-MA2-06	Role of leased out water tanks in livelihood generation in Maharashtra: An economic analysis	Dr Swadesh Prakash

(FPB) Fisheries Extension (FEX)

60	Ms. N. Nibedita Palita FEX-MA2-01	Fishers' livelihood and Institutional arrangements in Hirakud reservoir region of Odisha	Dr Ananthan P.S.
61	Mr. Shaikh Yunus Shaikh S. FEX-MA2-02	Fishers livelihood and institutional arrangement in Ujjani reservoir region of Maharashtra	Dr Ananthan P.S.
62	Ms. Shweta Kumari FEX-MA2-03	Self help groups in fisheries sector, Chhattisgarh –A performance appraisal	Dr Arpita Sharma
63	Ms. Dona P. FEX-MA2-04	Need assessment for empowering fisher community in Kerala	Dr Sheela Immanuel
64	Mr. Ramesh Kumar Mehta FEX-MA2-06	Conflict management strategy in selected floodplain wetlands of North Bihar	Dr S.N. Ojha

Fish Physiology & Biochemistry

65	Mr. Bhisham DevTyagi FPB-MA2-01	Responses of dietary proteins on the gene expression of hepatic FAB regulatory enzyme, Acetyl CoA carboxylase in *Labeo rohita* (Hamilton 1822)	Dr P.P. Srivastava
66	Mr. Vipin Chandra Nautiyal FPB-MA2-02	Pharmacokinetice and physio-metabolic response to albendazole in *Labeo rohita* (Hamilton 1822)	Dr Subodh Gupta
67	Mr. Chingakham Sinthoileima FPB-MA2-03	Elucidating osmorespiratory endurance in pearl spot, *Etroplus suratensis* (Bloch, 1790) in hyperosmotic environment	Dr S. Das Gupta
68	Mr. Ravi Bhumarkar FPB-MA2-04	Gene expression study of amylase and hexokinase in *Pangasianodon hypophthalmus* (Sauvage, 1878) fed with graded level of carbohydrate	Dr Sujata Sahoo
69	Ms. Chiging Yadii FPB-MA2-05	Gene expression studies of prolyl-4-Hydroxylase and quantification of collagen in *Pangasianodon hypophthalmus* (Sauvage, 1878) fed with vitamin - C	Dr P.P. Srivastava
70	Mr. Sarvendra Kumar FPB-MA2-06	Expression of MyoD gene in *Pangasianodon hypophthalmus* (Sauvage, 1878) fed with different level of dietary protein	Dr Subodh Gupta

Fish Nutrition & Feed Technology (FNFT)

71	Mr. Amit Ranjan FNFT-MA2-01	Dietary energy requirement of *Pangasianodon hypophthalmus* (Sauvage, 1878) juveniles reared in different thermal acclimation	Dr K.K. Jain
72	Mr. Adnan Hussain Gora FNFT-MA2-02	Expression of defensin gene and immunomodulatory responses of *Labeo rohita* (Hamilton, 1822) fed with fucoidan rich seaweed extract	Dr N.P. Sahu
73	Mr. Bhushan N. Sanap FNFT-MA2-03	Utilization of electron beam irradiated jatropha kernel meal in the diet of *Labeo rohita* (Hamilton, 1822) fingerlings	Dr. Parimal Sardar
74	Mr. Daniel N. FNFT-MA2-04	Effect of dietary ascorbic acid on growth and immune response of	Dr Muralidhar P. Ande
75	Mr. Subramaniyan S. FNFT-MA2-05	Studies on dietary tolerance limit of allylisothiocyanates in *Pangasionodon hypophthalmus*	Dr G.H. Pailan
76	Mr. Khushvir Singh FNFT-MA2-06	Larval rearing of *Anabas testudineus* (Bloch, 1792) with H U F A and vitamin C enriched live food organisms	Dr S. Munil Kumar

Note: Sr.No.31, 42 & 54 have not completed their M.F.Sc. till 31st March, 2015

4.5. List of Ph.D. students awarded the degree during 1.4.2014 to 31.03.2015

Sr. No.	Name of the student	Topic of the thesis	Major Advisor	Date of Viva-voce
2007-2010 Batch				
1	Sandeep P. Jadhav AQ-291	Reproductive Biology of *Chela* sp. from Dimbe Reservoir, Pune, Maharashtra, India	Dr. Kiran Dube Rawat	06.01.2015
2008-2011 Batch				
1	Absar Alam AQ-315	Studies on the Life History Traits of *Oreochromis niloticus* (Linnaeus, 1758) of the River Yamuna at Allahabad	Dr. N. K. Chadha	14.08.2014
2	Gyanaranjan Dash FPM-329	Evaluation of Probiotic Effects of *Lactobacillus plantarum* on Giant Freshwater Prawn, *Macrobrachium rosenbergii* (de Man, 1879)	Dr. R. P. Raman	29.09.2014
3	Kiruba Sankar, R. AQC-314	Distribution, Abundance and Regeneration Studies of Selected Marine Sponges of Andaman Waters	Dr. N. K. Chadha	09.12.2014
4	Nagalakshmi K. PHT-322	Identification and Authentication of Seafood in India Using DNA Barcoding	Dr. W. S. Lakra	16.12.2014
5	Chandan Debnath AQ-313	Evaluation of Growth and Production of *Ompok bimaculatus* (Bloch, 1794) in Monoculture and Polyculture with Carps for Aquaculture Diversification and Species Conservation	Dr. Kiran Dube Rawat	06.01.2015
6	Viji P. PHT-321	Effects of Plant Extracts on the Quality of Indian Mackerel, *Rastrelliger kanagurta* (Cuvier, 1817), Preserved by Chilled and Frozen Condition	Dr. T. K. Sreenivasa Gopal	29.01.2015
7	Pronob Das AQC-320	Physio-Biochemical Responses of *Labeo gonius* (Hamilton, 1822) Fingerlings Exposed to Multiple Stressors and its Mitigation Strategy	Dr. Neelam Saharan	19.02.2015
8	Sreenath K. R. AQ-317	Ecological Studies of Gulf of Kutch Coral Reefs with Special Emphasis on Scleractinian Diversity	Dr. Chandra Prakash	31.01.2015
2009-2012				
1	Suhas P. Kamble AQ-355	Studies on the Larval Rearing of *Clarias batrachus* (Linnaeus, 1758) for Optimum Survival	Dr. A. K. Sahu	25.06.2014
2	Shabir Ahmad Dar FRM-346	Techno-economic Efficiency of Gill Netters Operating Along Mumbai Coast, Maharashtra	Dr. Saly Thomas	05.07.2014
3	B. Nightingale Devi FEX-373	Organisational Structure, Market Dynamics and Livelihoods in Ornamental Fish Production & Trade	Dr. M. Krishnan	14.08.2014

4	Kumari Pushpa FPM-368	Characterization of Complement C3 of *Labeo rohita* (Hamilton, 1822)	Dr. M. Makesh	16.08.2014
5	Arun Sharma AQ-350	Effect of Selected Plant Extracts on Growth, Survival, Immunity and Disease Resistance of *Labeo rohita* Fingerlings (Hamilton, 1822)	Dr. N. K. Chadha	22.11.2014
6	Rahul K. Sadawarte FRM-343	Studies on the Biology and Stock Assessment of *Saurida tumbil* (Bloch, 1795) from Ratnagiri Waters	Dr. S. K. Chakraborty	07.01.2015
7	Thongam Ibemcha Chanu AQ-349	Effect of Dietary Herbal Extracts Supplementation on Growth, Survival, Stress and Disease Resistance of *Labeo rohita* (Hamilton, 1822)	Dr. S. Dam Roy	17.01.2015
8	Nisha Elizabeth Joshua FEX-374	Fisheries Extension Strategy for Agricultural Technology Management Agency (ATMA) Kerala	Dr. S. N. Ojha	31.01.2015
9	Bindhi S. Kumar AQC-353	Nutritional Requirement and Feed Formulation for *Etroplus suratensis* (Bloch, 1790)	Dr. N. K. Chadha	12.02.2015
11	Satyenra Kumar Singh FRM-341	Assessment of Intertidal Molluscan Biodiversity from Selected Shores Along the Maharashtra Coast	Dr. A. K. Jaiswar	13.02.2015
12	Suresh Adiga M. FRM-336	Assessment of Marine Fisheries Management Performance in Maharashtra and Karnataka	Dr. P. S. Ananthan	13.3.2015
13	Viji, C. S., AQC-348	Studies on Integrated Multi-Trophic Aquaculture in a Tropical Estuarine System in Kerala, India	Dr. K. Sunil Mohamed	16.03.2015
2010-2013				
1	T. Neeraja AAHM-426	Studies on the Metazoan Parasites of Selected Marine Fishes off Mumbai and Visakhapatnam Coasts	Dr. Gayatri Tripathi	24.06.2014
2	Monika Gupta AQC-400	Study on Induced Breeding and Seed Production of Indigenous Carp, *Labeo dyocheilus* (McClelland) in Captivity under Coldwater Condition	Dr. V. K. Tiwari	25.08.2014
3	GolamZiauddin FRM-387	Studies on the Productivity of Selected Floodplain in Gangetic Plain of West Bengal	Dr. Utpal K. Bhaumik	10.10.2014
4	Pankajkumar Mugaonkar FBM-417	An Economic Analysis of Production and Marketing of Pangasius in India	Dr. Nalini Ranjan Kumar	20.02.2015
2011-2014				
1	Ramesh Rathod AQC	Reproductive Performance of Pengba *Osteobrama belangeri* (Valenciennes, 1844) in Response to Dietary Lipids and Formulation of Suitable Diet for Fry	Dr. Kiran Dube Rawat	23.02.2015
2	Mohd. Ashraf Rather FB-PA1-01	Identification, Characterization and Expression Profiling of Kisspeptin Gene in *Catlacatla* (Hamilton, 1822)	Dr. Rupam Sharma	27.02.2015

4.6. Guest faculty invited from other institutions

Name of the faculty	Title of the lecture	Date
Dr. R.P. Barman Emeritus Scientist, ZSI	Principles of taxonomy	10 Sep,2014
Dr. Narayan Gowda Vice Chancellor (Retired) UAS , Bangalore	Review of work done by the social sciences division, ICAR- CIFE	13 Sep, 2014
Dr. E.Vivekanandan Emeritus Scientist, CMFRI	Climate change fishery	15 Sep, 2014
Dr. V.S. Somvanshi Rtd. D.G.. FSI.	Deep Sea Fishery Resources.	16 Sep, 2015
Dr. M. Srinath Rtd. HOD, CMFRI.	Dynamic Pool Model	18 Sep, 2014
Dr. V.D. Deshmukh SIC, CMFRI	Stock recruitment analysisl	20 Sep, 2015
Dr. S. Kannan Deputy Director, MPEDA Regional Centre, Vijayawada	Present status and future prospects of brackish water aquaculture - MPEDA Perspectives	22 Sep. 2014
Dr. Raj Kumar Chief Executive Officer, NaCSA, Kakinada	Present status and future prospects of shrimp farming in Andhra Pradesh	26 Sep. 14
Dr. R. Shanmughanandam Proprietor, Galaxy Biolabs & Entrepreneur cum Consultant, Shrimp Farming/ Ornamental Fisheries, Tamil Nadu	Recent Trends in Ornamental Fish Culture and Trade	13 Oct, 2014
Mrs. Shashi Kala Goliet Asstt. Director, Dept. of Fisheries, Dist. Hoshangabad	Policies of State Govt. Fisheries Dept. for the fish farmers/fishermen	18 Nov ,2014
Dr. A.D. Diwan Ex.ADG (Fy.)	Fish and shell fish physiology and endocrinology	22 - 23 Jan, 2015
Dr. Praduman Kumar Prof. & Head (Retd.), Div. of Agril Economics, IARI, New Delhi	Econometrics	23-27 Mar, 2015

4.7. Invited Lectures delivered in other Universities/institutes etc.

Title	For	Place	Date	Faculty
Best management practices in Freshwater fish culture	Training programme	State Institute of Fisheries Technology, Govt. of Andhra Pradesh	14 Apr, 2014	Suresh Babu
Oral presentation given on achievement of CIFE in Research and Development	42th Sanyukt Krishi Sanshodhan ani Vikas Samitee Baithak, (AGRESCO) 2014	Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth Dapoli, Dist Ratnagiri	11 May, 2014	Asha Landge
Human Genome Project	In-service Course for PGT Biology	Kendriya Vidyalaya, Bhandup, Mumbai	10 Jun, 2014	Aparna Chaudhuri
Molecular Biology Laboratory Set-up	In-service Course for PGT Biology	Kendriya Vidyalaya, Bhandup, Mumbai	13 Jun, 2014	Aparna Chaudhuri
Innate immune mechanisms and pathogen recognition receptors in crustaceans	National Symposium on Crustacean Biology: Moulting, reproduction and immunology	Department of Zoology, University of Madras	27-28 Jun, 2014	K.V. Rajendran
Fish culture	*Krishak Mitra'* trainees	Farmers Training Centre, Dept. of Agriculture, Powarkheda	06 Sep, 2014	Somdutt
Magur seed production and culture	Assam fish farmers /entrepreneurs training course	State Institute of Fisheries Technology, Kakinada	08 Sep, 2014	Suresh Babu
Fish culture	'Krishak Mela' exhibition	Farmers at Mandi prangan, Dept. of Agriculture, Hoshangabad	20 Sep, 2014	Somdutt
Alternative fish culture	B.F.Sc student from Tripura, training course	State Institute of Fisheries Technology, Kakinada	29 Sep, 2014	Suresh Babu
Fish culture and Integrated fish farming	'Krishi Mela' Mandi Prangan	Dept. of Agriculture, Dist. Khargaon	09 Oct, 2014	R. K. Upadhyay
Role of CIFE Centre Powarkheda and fish culture	'Krishi Mela' at Mandi Prangan Hoshangabad	Dept. of Agriculture, Hoshangabad	17 Oct, 2014	Somdutt
Carp farming and scampi farming techniques	B.Sc aquaculture students	Govt. College Yanam	01 Nov, 2014	Suresh Babu
Brackish shellfish farming in brackish water aquaculture	Seminar	Dr. Sallepalli Radha Krishna Govt College, Yanam, Pondichery	05 Nov, 2014	Suresh Babu
Prospects of cottonseed cake in aqua feeds	Better utilization of cottonseed	Central Institute for Research on Cotton Technology, Mumbai	10–14 Nov, 2014	N.P. Sahu
Status and strategies for strengthening of economics	Agricultural Economics Research and Education in National Agricultural Research System in India	UAS, Raichur	18 Nov, 2014	M. Krishnan
Basic biology & fisheries	Extraordinary Master's Course	Lal Bahadur Shastri Academy of Maritime Sciences.	Nov-Dec, 2014	S.K. Chakroborty
Prospects of shrimp farming in salt affected soils in Punjab	Livestock EXPO, 2015	Department of Fisheries, Punjab	11 Jan, 2015	Harikrishna

Recent trends & importance of fisheries economics & Its global perspective		College of Fisheries, West Bengal University of Veterinary and Fisheries Sciences, Kolkatta	06 Feb, 2015	M. Krishnan
Fish culture	Krishak Mitra trainees	Farmers Training Centre, Dept. of Agriculture, Powarkheda.	07 Feb, 2015	Somdutt
Fish culture and Integrated fish farming.	'Krishak Mitra' trainees	Farmers Training Centre, Dept. of Agriculture, Powarkheda	11 Feb, 2015	R. K. Upadhyay
Better Management culture practice of *L. vannamei* farming	Seminar	Sri Venkateswara Veterinary University Kakinada Research Station	03 Mar, 2015	Suresh Babu
Chepala pempakam paddatulu, samasyalu pariskaralu	Seminar	Anaperthi Village	06 Mar, 2015	Suresh Babu
Fish culture and Integrated fish farming.	'Krishak Mitra' trainees	Farmers Training Centre, Dept. of Agriculture, Powarkheda	17 Mar, 2015	R. K. Upadhyay
Impact of pellet feed/ aerators in the growth and economics of Fish culture	Seminar	ARTI, Hissar, Haryana	20 Mar, 2015	Harikrishna Arun Sudhagar
Fish seed and fish production technique: Problems and solutions	Seminar	Sri Venkateswara Veterinary University, (SVVU) Kakinada	20 Mar, 2015	Suresh Babu
Effect of stocking density in growth of culturable fishes	Seminar	ARTI, Hissar, Haryana	22 Mar, 2015	Harikrishna Arun Sudhagar. S
Role of students in development of villager's livelihood	College students in NSS camp	Itarsi, Hoshangabad Govt. M.G.M. College, Itarsi.	23 Mar, 2015	R. K. Upadhyay
Role of Post harvest technology and marketing linkage in fish farming in Haryana state	Seminar	Panipat, Haryana	24 Mar, 2015	Harikrishna Arun Sudhagar. S
Scope of ornamental fishes as economically important venture	Seminar	Karnal, Haryana	25 Mar, 2015	Harikrishna Arun Sudhagar
Chapipillau & chepalon pempocum samasyalu, vati pariskerelu"	Seminar	Biccraroly SVVU, Kakinada	26 Mar, 2015	Suresh Babu
Alternative fish and shrimp culture in fresh and brackish water	Training programme	SIFT, Kakinada	26 Mar, 2015	Suresh Babu
Aquaculture and job opportunities for students	B.Sc. and M. Sc. students. Govt. Home Science College	Jabalpur	24 Aug, 2014	R. K. Upadhyay
Better Management culture practice of *L. vannamei* farming	Seminar	SVVU, Kakinada	25 Nov, 2015	Suresh Babu
Aquaculture biosecurity control and animal health management- Indian experiences	Asia-Pacific Fishery Commission (APFIC), Regional Consultative Forum Meeting	Hyderabad	19-21 Jun, 2104	K.V. Rajendran

4.8. Students' paper presentations in International Seminars/Conferences

4.8.1. International

Ms. Piyashi Deb Roy & **Ms. Prithvi Rani,** Ph.D (FBM) and **Mr. Tesfom Malake Araya**, M.F.Sc(FEC) attended and presented papers in the International Institute of Fisheries Economics and Trade (IIFET) Conference 2014, held at Queensland University of Technology, Brisbane, Australia from 7-11 July 2014.

Mr. Pankaj Mugaonkar, Ph.D (FBM) at Applied Seafood Marketing Data: Understanding Statistics and Forecasting Market Trends at UIMP, Zaragoza, Spain 23- 27 Feb, 2015

Ph.D. student T. Neeraja (AAH) attended International Conference to present her Ph.D. paper during 13th International Congress of Parasitology, organized by the Mexican Society of Parasitology & the World Federation of Parasitologists, 10-15 Aug, 2014, Mexico.

Mr. Dani Thomas, M.F.Sc. (AQC) received the Best Oral Presentation Award in the Second International Conference on Fisheries, aquaculture and environment in the Indian Ocean, 24 – 26 February, 2015, Muscat, Sultanate of Oman for his research paper, "The environment influence on reproductive performance of *Amphiprion sebae*."

Mr. Lloyd Chrispin, Ph.D (Fisheries Extension), Ms. Nibedita Palita and Ms. Swetha Kumari, M.F.Sc (Fisheries Extension) at Global Conference on Inland Fisheries, organized by Food and Agriculture Organization (FAO) and Michigan State Univeristy (MSU) at Rome, Italy 26-28 Jan, 2015

4.8.2. National

Students' paper presentations in National Seminars/Conferences

Raushan Kumar presented a paper on Managing Chaur Fisheries in Bihar: An Analysis of Management regimes, Conflicts and Institutional Options in the 42nd Annual conference of Agricultural Economics Research Association held at Raichur, Karnataka during 18-20 November,2014

Saloni Shivam presented a paper on Replication pattern of white spot syndrome virus (WSSV) in *Macrobrachium rosenbergii* and *Penaeus monodon* in the XXIII National Conference on "Recent Trends in Virology Research in the Omics Era" December 18-20, 2014, Tamil Nadu Agricultural University, Coimbatore.

Daniel. N and Amit Ranjan participated in 10th IFAF held at NBFGR, Lucknow during 12-15 November, 2014

4.9. Honours and awards received by students

Jawaharlal Nehru Award for Outstanding Doctoral Thesis

Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences-2013 under the subject area 'Fisheries Sciences' was bagged by Dr. (Mrs.) Ciji Alexander who has completed her Ph.D in Fish Nutrition and Biochemistry from Central Institute of Fisheries Education, Mumbai under the supervision of Dr. N.P. Sahu, Principal Scientist and Head, Division of Fish Nutrition, Biochemistry and Physiology.

Title of the thesis: Physio-metabolic responses of *Labeo rohita* (Ham.) exposed to nitrite stress and its possible mitigation through dietary vitamin E and tryptophan

Best Oral Presentation Award

Mr. Dani Thomas, M.F.Sc. (AQC) received the Best Oral Presentation Award in the Second International Conference on Fisheries, Aquaculture and Environment in the Indian Ocean, 24 – 26 February, 2015, Muscat, Sultanate of Oman for his research paper, "The environment influence on reproductive performance of *Amphiprion sebae*."

Best P.G. Thesis award

DR. N.R. Menon best P.G. Thesis award for the year 2014 was given to Mr. Amitava Ghosh, M.F.Sc. (FEX) student for the thesis entitled "Effectiveness of fisheries based television programmes in West Bengal" .

Young Scientist award

Remya L received the young scientist award for her paper on 'Column mode biosorption: a new approach for heavy metal remediation of water' presented in Proceedings of 10th Kerala Environment Congress, Ernakulum , 22-23 Aug,2014.

Certificate of Appreciation

The PFGF, Mangalore awarded the "Certificate of Appreciation" (2014) to Dr. Nightingale Devi for her Ph.D thesis (Fisheries Extension) on "Oganisational structure, institutional arrangements and livelihoods in ornamental fish production and trade"

Fellowships

Miss Saima Rehman received INSPIRE fellowship for Ph.D. research in 2014

Rajiv Gandhi National Fellowship (2014-15) was awarded to Ms. Hoilenting, M.F.Sc.(FEC) to pursue Ph.D. Degree

Professional Fisheries Graduate Forum (PFGF), Best Fisheries Graduate of India

The Professional Fisheries Graduate Forum (PFGF) of India has been conducting a national level examination to identify the "Best Fisheries Graduates of India". Out of 150 students top five students were awarded the Best Fisheries Graduate of India award with ranking in the ceremony held during the National Conference on Strategies for Bridging the Yield Gap in Fisheries and Aquaculture at College of Fisheries, Mangalore on 24 march, 2014. It was appreciable to see that the top five rankers were the students pursuing their MFSc at CIFE.

Rank	Name	Discipline
1	Mr. Manu Kumar	FGB, CIFE
2	Ms. Ananya Ashok	AEM, CIFE
3	Mr. SajolKole	AAHM, CIFE
4	Mr. Ganesha R	FBT, CIFE
5	Mr. Showkat Ahmed Dar	FPB, CIFE

4.10. Lecture by faculty from abroad

Prof. Zhanjiang (John) Liu, Associate Vice President for Research & Associate Provost and Professor, School of Fisheries, Aquaculture and Aquatic Sciences, Auburn University, USA, delivered an introductory lecture on General fisheries on 17 Jan, 2015.

Chapter 5

Research Achievements

5.1. Institutional projects

Aquaculture

1. Seed production and culture of *Labeo calbasu* (Hamilton, 1822) in weed infested ponds. 2012-2015

N.K. Chadha, Somdutt, Chandra Prakash and Paramita Banerjee Sawant
Tech. Associates: R.K. Upadhyay and Hasan Javed

A total of 10.49 lakh spawn were produced and stocked in nursery ponds. About 50,000 fry of 25 mm size were supplied to Department of Fisheries, Govt. of Haryana and after rearing for two months 35,000 fingerlings were released in the river Yamuna at Dadupur, Yamuna Nagar (Haryana) for rejuvenation and conservation. Another 20,000 fingerlings were released in River Narmada at Hoshangabad (M.P.) for rejuvenation and conservation and 82,000 fry were sold to private farmers. Nearly 25,000 fingerlings are being raised for future stock at the farm.

Experiments were conducted using different treatments of alum in experimental tubs of 100 L capacity, where the weeds *Chara* sp. and *Hydrilla* sp. were grown upto 45 days and thereafter, effect of alum on the weeds were measured in terms of reduction in Chlorophyll *a* and *b* in case of weeds and pH, nitrate and phosphate concentrations in case of water, where the weeds were grown and treatments were applied. It was observed that alum at a dosage of 500 ppm was effective for controlling weed, wherein, effect of alum was noticed within 24-72 hrs after its application (after 45 days of growth), evidenced by discoloration. Complete decomposition was observed by 60th day. Use of alum beyond 500 ppm resulted in lowering of pH less than 4, making water more acidic and unsuitable for fish culture. Nitrate and phosphate concentrations were reduced considerably within 6 hrs.

2. Assessment and bioremediation of Pendimethalin toxicity in common carp (*Cyprinus carpio*), 2012-2015

Neelam Saharan, P.P. Srivastava and Gayatri Tripathi

Bioremediation of pendimethalin in aquatic environment which included characterization of pendimethalin resistant bacteria from aquatic environment and evaluation of their remediation capacity for the development of eco-friendly and cost effective method of pendimethalin removal. Tank water enriched with pendimethalin was taken for isolation of pendimethalin resistant bacteria which contained significant numbers of culturable pendimethalin resistant bacteria. The pendimethalin resistant bacteria isolated from the pendimethalin amended nutrient agar plates were able to grow in liquid medium of nutrient broth which was amended with 0.5 mg l^{-1}pendimethalin. A total of twelve pendimethalin resistant bacteria were isolated from the water sample. These bacteria were identified and their bioremediation capacities were worked out.

3. Grow out culture of table size *Clarias batrachus* and *Macrobrachium rosenbergii* in floating net cages. 2012-2015

Kiran Dube Rawat, Neelam Saharan, A. K. Reddy, C. S. Chaturvedi and Chandra Prakash

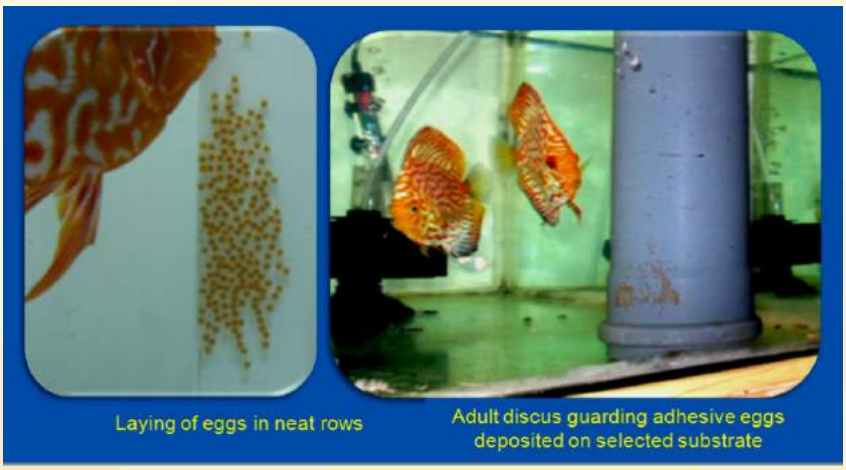
The experiments were conducted at Powai lake, Mumbai. The animal used for cage culture experiment was juveniles of *Macrobrachium rosenbergii*. Stocking density at (20/m^2), showed the best results both in terms of length and weight. In another experiment conducted to see the effect of

substrate on the growth of *M. rosenbergii* different units of substrate were used. The best results were observed in T1 (one unit of substrate) followed by T2 (two units of substrate).

4. Breeding, larval rearing and colour enhancement of selected high value tropical ornamental fishes. 2012-2015

Paramita Banerjee Sawant, N.K. Chadha, Chandra Prakash, P.P. Srivastava, S. Dasgupta and S.G.S. Zaidi

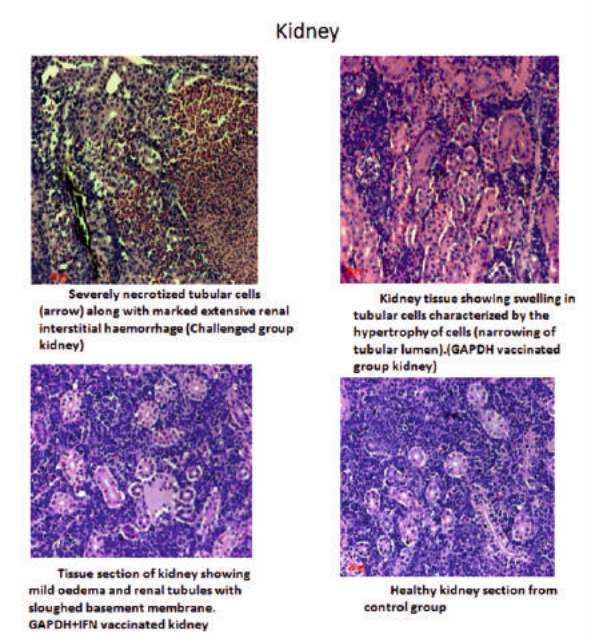
Growth and survival of tropical ornamental fish, Discus (*Symphysodon aqueifasciatus*), at various stocking densities, indicated higher specific growth rate and survival at a stocking density of 1 juvenile/7.5 litres. With increase in stocking density, there was decrease in growth and survival of the fishes. Water quality parameters, pairing and courtship behavior, embryonic development of *S. aqueifasciatus* were documented . Total 18 breeding pairs were selected out of 23 pairs of brood fishes of age (10-12 months) for conducting an experimental trial on the effect of temperature on reproductive efficiency of Discus. The temperature below 26.5°C was recorded as unsuitable for breeding. In the range of temperature of 27°C to 31.5°C, the egg hatching time decreased significantly with the increasing in temperature. Maximum number of spawning (4-5) and % spawning success (53.33 ± 3.33) were recorded at a temperature of 27 -30°C. Inter spawning interval (days) and egg fertilization rate (%) were the highest as 21.67 ± 0.33 and 75.42 ± 1.67 respectively, at 29-30°C and decreased thereafter with further increase of temperature. Range of water quality parameters were also standardized for courtship, spawning and optimal reproductive success. Seed produced from 7 pairs of Discus (S. *aqueifasciatus*) were reared for raising the brood stock.



5. Evaluation of biofloc based system for rearing of *Labeo rohita* and *Letopenaeus vannamei*. 2013-2016

Babitha Rani. A.M, A.K. Reddy, K. Paniprasad, A.K. Verma and V. Harikrishna

Evaluated growth of *L. vannamei* under *in situ* based biofloc using three different stocking densities in inland salinewater. A 60 days growth trial was achieved with zero water exchange in inland saline water fortified with potassium (K+). Significantly higher growth rate (0.13-0.18g/day) in biofloc based culture system compared to those reared in raw sea water (0.09 g/day) was obtained and was supporting a stocking density upto 180 no/m^2. The growth, survival and immune status of the fish was found to be better upto a stocking density of 140 no./m^2 without much negative impact on water quality especially dissolved O_2.



6. Development of bicistronic DNA vaccine construct against *Edwardsiella tarda*. 2012- 2015

Megha Kadam Bedekar, K.V., Rajendran Gayatri Tripathi and M. Makesh

Bicistronic DNA vaccine construct against *Edwardsiella tarda*, that contains GAPDH gene of *E. tarda* and Interferon gamma gene of *Labeo rohita* was developed. Vaccine trial in *L. rohita* fingerlings showed synergistic effect of Interferon gamma in immune response to DNA vaccine. Around 63% protection iwas recorded in GAPDH+IFN vaccinated group compared to 49 % in GAPDH group. The results showed that IFN gamma is an ideal candidate for immune adjuvant in rohu.

7. Monitoring of pollution in a coastal ecosystem and assessment of trophic transfer of persistent pollutants. 2012-2015

A. Vennila, C.S. Purushothaman, S.P. Shukla, P.K. Pandey and V. S. Bharti

Water sediment, fish prawn sample were collected through trawling from coastal ecosystem off Versova and Thane and Pollution Load Index (PLI) and Potential Ecological Risk Index (RI) were calculated. The values for PLI ranged from 0.82 to 1.20 indicating the poluted state of the water. RI ranged from 15-56 to 76.78 depecting a low risk status at the studied sites. Fish and prawn samples collected through trawling (3 hauls on each occasion) from coastal ecosystem off Versova using MFV *Narmada*. Samples were also collected using hired fishing boat *Jivdani* using *dolnet* (4 nettings each day).

8. Designing and testing of column based water filtration units for removal of inorganic and organic waste from hatchery wastewater. 2012-15

S.P. Shukla, A. Vennila, P.K. Pandey and V.S.Bharti

A column based unit was designed for the treatment of ammonia in water. The adsorption capacity of conventional adsorbents such as zeolite and activated charcoal was enhanced by treatment with small quantity of algal adsorbents. Trials with metalloid Arsenic (III) showed that the technology could effectively remove this metalloid from water. An application of graded magnitude of electric field in the column showed a considerable increase in the removal efficiency of column based unit.

9. Development and characterization of embryonic stem-like Cells from *Carassius sp.* 2012-2015

Gayatri Tripathi, W. S. Lakra, Megha Bedekar and Kundan Kumar

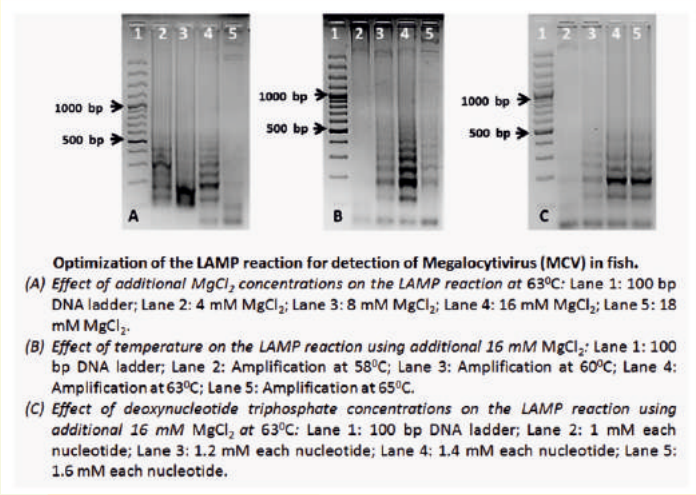
Embryonic stem cells were cultured through feeder layer and feeder free methods and characterised by alkaline phosphatase staining and the expression of pluripotency marker Oct-4 gene, which could also be partially amplified (accession no. Km000856).

Co-relative expression profile of stem cell marker genes Oct-4, POU2, SOX2, SOX3 and Nanog in the embryoblast, ovary, testis, liver, kidney, heart, blood, spleen and muscle tissues have been studied through Real Time PCR.

10. Loop mediated isothermal amplification (LAMP) based detection of selected pathogens of fish. 2014-2017

Gaurav Rathore, K.V. Rajendran, M. Makesh and Kundan Kumar

Four sets of primers were designed from the major capsid protein gene of Megalocytvirus (MCV) Off these, three primer sets were designed to contain loop primers for accelerated LAMP reaction.



Optimization of the LAMP reaction for detection of Megalocytivirus (MCV) in fish.
(A) Effect of additional $MgCl_2$ concentrations on the LAMP reaction at 63°C: Lane 1: 100 bp DNA ladder; Lane 2: 4 mM $MgCl_2$; Lane 3: 8 mM $MgCl_2$; Lane 4: 16 mM $MgCl_2$; Lane 5: 18 mM $MgCl_2$.
(B) Effect of temperature on the LAMP reaction using additional 16 mM $MgCl_2$: Lane 1: 100 bp DNA ladder; Lane 2: Amplification at 58°C; Lane 3: Amplification at 60°C; Lane 4: Amplification at 63°C; Lane 5: Amplification at 65°C.
(C) Effect of deoxynucleotide triphosphate concentrations on the LAMP reaction using additional 16 mM $MgCl_2$ *at* 63°C: Lane 1: 100 bp DNA ladder; Lane 2: 1 mM each nucleotide; Lane 3: 1.2 mM each nucleotide; Lane 4: 1.4 mM each nucleotide; Lane 5: 1.6 mM each nucleotide.

RSIV DNA was procured from Japan and used as positive control for standardization of nested PCR. A nested PCR was standardized by using 1st-step primer C1105F and C1106R which resulted in a 430 bp product and nested primer C1073 and C1074 resulted in 167 bp PCR product. First step PCR product of the 430 bp was ligated into T-vector (Merck, India) to produce recombinant plasmid containing MCP fragment of MCV. This recombinant plasmid containing a MCP fragment of MCV was used as a positive control in LAMP.

LAMP assays were performed at 60, 63, and 65°C using master mixes with various concentrations of $MgSO_4$/$Mgcl_2$ (6, 8, and 10, 12 and 16 mM), betaine (1, 1.5, and 2 M), and primers (0.1, 0.2, and 0.4 µM F3 and B3; and 1, 1.6, 2, and 4 µM FIP and BIP. Positive control plasmid DNA was serially diluted in nuclease-free water and used as a template to assess the performance of LAMP. Amplification reactions were carried out in thermal cycler, water bath and dry bath and LAMP products were analyzed by electrophoresis on ethidium bromide-stained 2% agarose gels. Out of 4 primer sets tested, only the primer set 176 resulted in positive LAMP reaction. Typical DNA ladder like pattern could be observed by gel electrophoresis under UV light.

Fisheries Resource Management

11. Assessment of molluscs, crustaceans and algal biodiversity along intertidal region of Maharashtra coast. 2012-2015

S.K. Chakraborty, Geetanjali Deshmukh, Asha T. Landge, Suryakant Patil, Annam Pavan Kumar and Ashok Kumar Jaiswar

The data on occurrence, density and biomass of molluscs were studied from the selected sites. Over all biodiversity at all the stations was found to be comparatively very less during monsoon season.The dominant molluscan species were *Nerita oryzarum*, *Saccostrea cucullata*, *Cerethium morus*, *Euchelus asper*, and *Bursa tuberculata*. Barnacles and rock oyster *Saccostrea cucculata* were found to be most dominant fauna along the supra to mid littoral zones. The occurance of algal species were recorded.

12. Taxonomic evaluation and phylogenetic study of flatfishes (Order –Pleuronectiformes) occurring in Indian waters. 2013-2016

A. K. Jaiswar, S. S. Mishra (ZSI Kolkata), Annam Pavan Kumar and Shashi Bhushan

Total 31 species of flatfishes belonging to family Cynoglossidae, Bothidae, Samaridae, Pleuronectidae and Soleidae were collected from the landing centres from Maharashtra, Gujarat, Kerala Tamil Nadu and Odissa and West Bengal. Morphological studies of the collected samples have been recorded.

13. Occurrence and dissemination of antimicrobial resistance and virulence factors among *Enterobatriaceae* in seafood. 2012-15

H. Sanath Kumar, B. B. Nayak and L. Manjusha

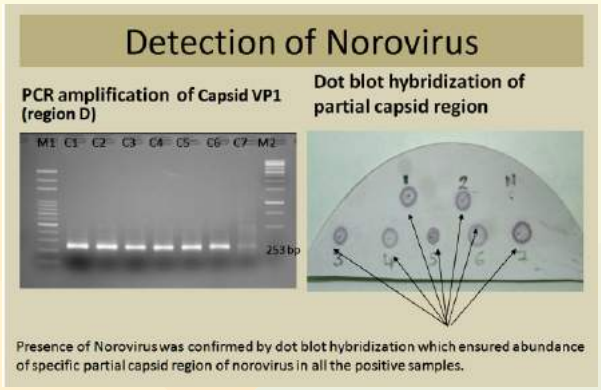
Virulence gene composition of ESBL^{+}isolates - 66 isolates of *E. coli* screened for virulence genes of Shiga toxin *E. coli* (STEC). The genes detected were *stx1* (2 isolates), *stx2* (4 isolates). *hlyA* & *eaeA* were not detected.

Transferability of antibiotic resistance factors - Presence of antibiotic resistance genes in plasmid was confirmed in NDM-5 positive *E. coli* Ec114. Conjugation experiment was performed and the recipient strains were selected on MacConkey agar containing sodium azide and cefotaxime

14. Enteric viral risk assessment of seafood. 2013-16

B.B. Nayak , H. Sanath Kumar and K.V. Rajendran

Fifty eight samples were analysed for Total Bacterial Count . MPN for total coliforms, fecal coliforms and *E.coli,* Viral RNA by RT-PCR for norovirus, poliovirus, enterovirus and Hepatitis A virus. Nine samples were positive for Norovirus (Genogroup 2), four positive for Polio virus and enterovirus, one with Hepatitis A virus. All samples were contaminated with fecal indicators. The correlation of 0.89 existed between norovirus presence and total bacteria



15. Development of acetes based value added fish products. 2013-16

A.K. Balange, G. Venkateshwarlu G., B.B. Nayak, H. Sanath Kumar and Martin Xavier

It was observed that most of the health beneficial minerals i.e. P, Ca, K, Mg, Na and Fe are present in the *Acetes*. Among those minerals, contribution of Ca was highest i.e. 4.553% followed by Na with 3.016%. Heavy metal analysis revealed the presence of Cd and Pb at a range of 1.42 and 0.47 ppm respectively. Trace elements like Cu and Zn were also detected.

Experiments were conducted to develop ready to eat value added *Acetes* snack product i.e. *Acetes kure* from *Acetes*. Both fresh as well as dried form of *Acetes* was used at different levels i.e. 5, 10 and 20% for the preparation of *Aceteskure* . Based on the biochemical composition, textural profile analysis and sensory scores of all extrudates, it was observed that samples added with dried *Acetes* were more acceptable than the fresh *Acetes* samples. In spite of being hard, samples with 20% levels of dried *Acetes* powder were rated with higher sensory scores. Standardized formulation of ingredients was done.

16. Development of fish products fortified with aquatic nutraceuticals. 2014-2017

G. Venkateshwarlu, A.K. Balange and K. Nagalakshmi

Aquatic fiber enriched, non-sweet surimi was prepared from striped catfish (*Pangasianodon hypophthalmus*) mince. Adding 1% chitosan to mince gels from Pangasius allowed an increase in textural properties like hardness, springiness, cohesiveness, chewiness and adhesiveness. Water holding capacity (WHC) and whiteness of the mince was improved by chitosan addition. Similarly Chitosan addition reduces the lipid oxidation parameters like PV and TBARS significantly. Experiments were conducted with chitosan in batter formulations and the products were fried in oil. Analytical results indicated chitosan incorporation reduced oil uptake of the product up to 35%. Chitosan inclusion in extruded products was conducted with different levels of chitosan powder (1, 2, 3 %) in cereal based extrudates. Results indicated that higher level of chitosan affects the expansion property of the extrudate.

Fish Nutrition, Biochemistry and Physiology

17. Nutritional requirement and nutrigenomics studies for growth and flesh quality in *Pangasianodon hypophthalmus* (Sauvage, 1878)

2012-15

Muralidhar P. Ande, K.K. Jain, Subodh Gupta, P.P. Srivastava, Sujata Sahoo

A feeding trial was conducted to determine the effect of vitamin C on the growth performance of *Pangasianodon hypophthalmus* juveniles. Seven purified diets with graded levels of ascorbic acid supplied as L-ascorbyl-2-polyphosphate (LAPP) which is a stable form of vitamin C. At the end of the experiment, vitamin C at the level of 46.4 mg Kg-1 in the diet of *P. hypophthalmus* is found to be optimum for growth performance, which was optimized using broken line regression analysis. Experimental diets supplemented with two levels of carotenoids (astaxanthin, canthaxanthin, beta carotene) and zinc were formulated and prepared for the flesh quality improvement of *P. hypophthalmus*. The partial gene of MyoD was cloned and sequenced. The length of partial nucleotide sequence was 408 bp long and showed maximum homology with Ameiurus catus MyoD gene (99%), followed by *Ictalurus punctatus* MyoD gene (94%) and *Pelteobagrus fulvidraco* MyoD gene (93%). The partial cDNA sequence of calpain gene of 390 bp was characterized and reported in NCBI Genbank (KM892852).

18 Expression profiling of growth and immune related genes in fish fed with carbohydrate rich diet

2014-2017

Sujata Sahoo, N. P. Sahu, K.K. Jain, Megha Kadam Bedekar and Sikendra Kumar

Three Isonitrogenous and isolipidic diets were prepared with graded level of carbohydrates (20%, 30% and 40% of digestible carbohydrate). Proximate analysis of the feed has been carried out. Total three treatment groups with three replicates per treatment were used to set up this experiment feeding trial in Zebra fish has been successfully completed.

At the end of the experiment, the weight gain percentage, SGR and survival rate was calculated. Highest weight gain was recorded in T2 group (175.34±0.27), followed by T1 group (145.33±6.64) and the lowest growth were recorded in the T3 group (53.36±0.60). The mean of SGR of the T2 (1.61±0.08) and T1 (1.52±0.0.08) were significantly higher ($P<0.05$) than T3 group (0.78±0.15) which was significantly different from other groups. The highest survival rate (%) is in the T2, followed by T1. The lowest survival rate was found in T3 group.

Intestinal amylase activity showed increased activity with increasing carbohydrate level in feed.

19. Stock comparison of *Clarias batrachus* (Linnaeus, 1758) for selective breeding (2012-17)

W.S. Lakra, S. Jahageerdar, Gopal Krishna, Rupam Sharma, C.S. Chaturvedi, Somdutt and Suresh Babu

Maintenance of brooders from A.P., W.B. and Assam stocks. Out of 62 families produced, 45 families were tagged after nursery rearing. Around 30 no fish per family were tagged and released in the earthen pond for further growth evaluation.

20. SNP mining within reported coding sequences of freshwater prawn *Macrobrachium rosenbergii* using next generation sequencing. 2012-2015

Aparna Chaudhari, C.G. Joshi, (AAU, Anand), P. Koringa (AAU, Anand), Gireesh Babu P and A. Pavan Kumar

SNPs were mined from 4 wild stocks collected from different water bodies across India by using the amplicon approach and high throughput sequencing on GS-FLX 454 and Ion torrent platforms at Anand Agricultural University, Anand, Gujarat. Twenty three transcribed sequences reported in GenBank, NCBI, were selected so as to include genes related to disease resistance, housekeeping, regulation and reproduction. Out of the total 173 SNPs detected, 72 were common to all stocks while some were stock specific. Pair-wise Nei's genetic distances, ranging from 0.114 to 0.443, showed phylogeny consistent with geographical distribution. AMOVA analysis revealed estimated variance of 21.5 among the four populations. The transition to transversion ratio was 1.98:1. Out of 101 SNPs found in coding regions, 68 SNPs were synonymous while 33 SNPs were non-synonymous (pN/pS – 0.49). Changes in amino acid classes were recorded for non-synonymous SNPs while change in codon preference was noted for synonymous ones. Genes were grouped as low, moderate and highly polymorphic based on SNPs/100 bp values. Three genes involved in pathogen defence were highly polymorphic, of which lectin 3 had the highest 6 SNPs/100 bp. This approach for mining SNPs and using them for population differentiation is reported for the first time. SNPs were uploaded on NCBI.

21. DNA barcoding of selected fishes from Indian. 2013-2016

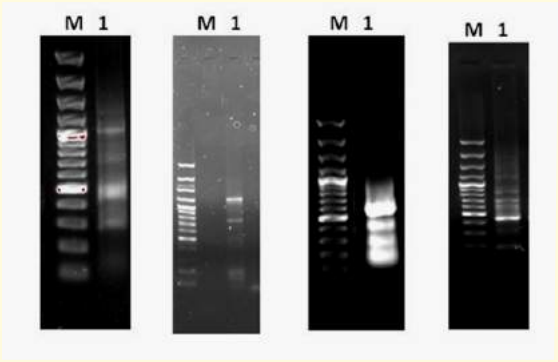
W. S. Lakra, S.K. Chakraborty, Gopal Krishna, Aparna Chaudhari, A.K. Jaiswar, Annam Pavan Kumar, K. Nagalakshmi and P. Gireesh Babu

A total of 109 DNA barcodes were generated for 39 species species of fishes representing Perciformes, Pleuronectiformes, Beryciformes, Clupeiformes, Gadiformes, Tetraodontiformes and Aulopiformes. The average genetic distance (K2P model) within species, genus and family was 0.446, 13.08 and 20.09%, respectively. For seafood authentication, a total of 100 fish processed products including fresh, fillet, frozen, ready to eat, ready to cook and canned products were collected from different parts of India. Analysis of these 100 fish processed samples showed 21% of mislabelling, the majority was from restaurants (32%).

22. Identification and validation of tri and tetra-nucleotide micro satellite loci in *Clarias batrachus*. 2012-15

Gireesh, Aparna Chaudhari, Rupam Sharma and A. Pavan Kumar

The project aims at developing tri and tetra-nucleotide microsatellite markers from Indian catfish, *Clarias batrachus* using enriched library method. A total of 174 repeat loci could be identified, of which 105, 9, 11 and 49 were perfect, imperfect, complex and compound repeats respectively while di, tri and tetra nucleotide repeats were 136, 27 and 11 respectively. For validating the identified microsatellite loci, a total of 42 primer sets were designed for 40 loci, of which 29 contained dinucleotide repeats, 6 had trinucleotide repeats and 5 contained tetranucleotide repeats. PCR conditions could be optimized for 11 primer pairs and 6 primer sets were validated among three wild stocks (30 samples each) of *C. batrachus* from River Godavari near Parnasala, Andhra Pradesh, River Brahmaputra, near Kaliabor in Assam and River Hooghly near Naihati, West Bengal. Among 6 microsatellite loci tested, 5 loci were polymorphic while one



was monomorphic. Number of alleles per microsatellite locus varied from 1 to 4 with a mean of 2.44. Allele frequencies ranged from 0.0 to 1.0 for different loci in different set of samples. The highest effective number of alleles was 2.721 in Cb21GACA and the lowest effective number was 1.241 of CbACT6-GT25. Cb21GACA locus showed maximum alleles (3-4) with highest PIC value (0.664) while locus CbACT6-GT25 showed less PIC value (0.164). The FST (0.164) and number of migrants values (0.718) indicated moderate level of population sub-structuring.

23. Development of technology for breeding, hatchery installation and rearing of riverine cat fishes (*Clarias batrachus, Pangasianodon hypophthalmus & Ompok pabda*. 2012-2015

C.S. Chaturvedi, Gopal Krishna, N. Saharan, Somdutt V.K. Tiwari, A. Sharma and A. Landge

Catfish hatchery has been installed at CIFE centre Powerkheda and achieved 90% survival in (*C. batrachus*) fry rearing in 30 days in cemented rings under shelter covered with blue or black polythene.

Fish Economics, Extension and Statistics

24, Ecology, livelihoods and governance in Indian reservoir Fisheries: An ecosystem based approach. 2012-15

P.S. Ananthan, A. Vennila, V. Ramasubramanian, Arpita Sharma, M. Krishnan, Asha Landge and Rama Sharma

Data and methodology: Revisited and updated the reservoir area and fish production for Odisha, Rajasthan and Maharashtra based on the recent remote sensing data (MoEF/SAC) and data from respective Fisheries Departments.

Reservoir fish yield estimates: Fish productivity more than doubled in small reservoirs to 110 kg/ha as compared to 1995 estimates, while it increased more than 7 times from 11 kg/ha to 85 kg/ha in large reservoirs. The change can be attributed in large measure to bringing more no. of reservoirs under fisheries management, planned stock enhancement programs, changes in species composition as well as improved data availability and estimation methods.

Case study of Ujjani reservoir revealed marked breaks and significant peaks in productivity levels during last 30 years with 39 kg/ha in 1992-93 (dominated by IMC) and 115 kg/ha by 2012-13 (dominated by tilapia) with the mean fishers household income of Rs.1.41 lakhs and a HDI value of 0.516 (0.572 for Maharashtra) and less income inequality among themselves than among non-fishers.

The multi-dimensional modeling approach 'RAPFISH' was modified with nearly 50 attributes specific for comprehensive understanding of reservoir fisheries management.

25. A value chain analysis of farmed shrimp in India. 2013-2016

Nalini Ranjan Kumar , M. Krishnan, Swadesh Prakash and Vinod Yadav

A sample survey was conducted in Navsari district of Gujarat to collect desired primary information for the study from sample respondents (actors in shrimp value chain) by personal interview method with the help of pre-tested specially designed questionnaire for the study. Using stratified random sampling a total of 80 shrimp farmers, and 30 other actors involved in shrimp value chain in two blocks namely Gandevi and Jalalpore of Navsari district were selected for the study. Input suppliers, farmers, commission agents, processors/exporters and export agents *were different* actors involved in the farmed shrimp value chain who perform different activities and add value to it. The value chains identified in shrimp farming were (i) producer-consumer; (ii) producer-wholesaler-retailer and (iii) producer-agent-processor cum exporter- export agent- importer. The last chain (iii) was most popular and was disposing of 93.68 percent of total shrimp produced on sample farms followed by chain 2(6.25%) and chain 1(0.06%). Shrimp farming was cost intensive as well as highly profitable enterprise where cost of shrimp farming varied from Rs.9.38 lakh/ha in case of white legged shrimp to Rs.6 lakh/ha in Black tiger shrimp with benefit cost ratio (B-C ratio) of 1.69 in Black tiger shrimp and 2.49 in White legged shrimp. All the actors in shrimp value chain were earning good profit with almost similar share in profit as in cost. In case of White legged shrimp value chain, farmers share was 76.31 percent in profit, 77.7 percent in cost and 57.71 percent in margin. The commission agent, on the other hand shared only 1.31 percent of profit and 1.83 percent of cost while processors contribution was 20.72 percent in profit and 18.25 percent in cost and 15.88 percent in margin. In both the cases farmers were gaining adequate share in value addition mainly due to high prices of shrimp in international market. The most critical contraint faced by shrimp farmers was outbreak of disease (WSSV) which got highest RBQ score of 92.25 followd by scarcity of skilled labour (RBQ 63.16), shrimp farming require high capital cost (RBQ, 62.78), unavailability of easy credit for aquaculture and others.

26. Economic evaluation and livelihood assessment of leased out ponds under panchayati raj system in Northern India. 2013-16

Swadesh Prakash, M. Krishnan, N.R.Kumar, A. Sharma and V. Ramasubramanian

Preliminary findings based on collected data of cost and return analysis reveals that the cost of fingerlings accounted for the largest proportion (16.7%) of the total cost of fish production, followed by cost of feed (14.4%). The lime cost and labour cost accounted for 3.2% and 3.9% of the total cost respectively. This clearly shows that large amount of money is spent by fish farmers for the purchase of fingerlings and feeds. The fixed cost of production consists of cost of fixed assets such as pump, vehicles, aerators and pond etc which accounted for 43.5% of total cost of production. Return over per rupee investment, over pond management , over fixed and over variable cost reveals profitable venture of fish culture in the selected district which are 1.23 ,2.23 5.18 and 3.19 1.23 respectively

The multiple regression result revealed that fish output was significantly determined by pond size, labour used, cost of feeds, cost of lime and cost of fingerlings of fish production in the selected area is economically rewarding and profitable. The degree of responsiveness of the value of fish output to changes in the independent variables shows that a percent increase in the values of pond size, labour, feeds, fertilizer, lime, fixed input and fingerlings will lead to 11.1%, 12.3%, 17.6%, 2.7%, 6% , 8.1% and 3.1% change in the value of fish produced

respectively which indicate that increase in the utilization of labour, feeds, fertilizer and seed have substantial positive impact on fish output. Sum of elasticity of production is greater than zero but less than one. The implication is that the more the inputs used, the higher will be the value of fish even though at a decreasing rate. Man days employment was 540 man-days/year/ha. So, it was observed that LOP based fisheries help these families to generate employment and proportionally livelihood. The integration of production and marketing activities together may enhance employment and livelihood to fish farmers.

27. Documentation of endogenous grass root level innovations in fisheries sector and facilitating patenting of innovations by CIFE scientist. 2012-15

A. Sharma, Rupam Sharma, S.P. Sukla, A. Langde, P.S. Ananthan, Rama Sharma, Ram Singh, S. S. Gajbhiye, S.K. Sharma and D. Bhoomaiah

To facilitate patenting of innovations by CIFE scientists, sensitization workshop on Patent Drafting was organized and DVD of the lectures on Patent Drafting was prepared and sent to CIFE Centres and Heads of the Divisions. Continuous follow ups were done with the scientists and the attorney which resulted in 6 patents filed at the Indian Patent office, 1copyrigt and 1 trademark were applied .

A draft booklet IPRs of CIFE has been prepared. With the success of this project, CIFE has been able to develop a model of facilitating scientists in patent filing through a project mode and with specific targets. This can be replicated elsewhere also. At the beginning a target was set that 2 patents per year should be filed by CIFE which was achieved successfully.

Kakinada Centre

28 Comparison of growth and reproductive performances of stunted yearlings of rohu and normal rohu. 2012-2015

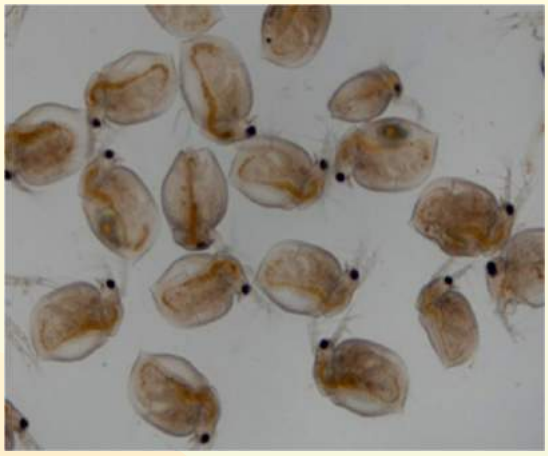
P. Suresh babu, Rupam Sharma and Babita Rani

The stunted yearlings were stocked in earthen ponds in duplicates at 0.5 / m^2 and 1 / m^2 in order to evaluate the effect of stocking rate on the growth of the fishes. The fishes in 0.5 / m^2 stocking rate reached an average size of 322.8 g (32.2 cm) and that of 1 / m^2 has reached an average weight of 258.5 g (27.5 cm).

Kolkata Centre

29. Utilisation of sewage to culture ornamental fish food organisms. 2012-2015

S. Munilkumar, B.K Mahapatra, G.H. Pailan and Subhendu Datta



Samples of moina, tubifex and copepods were frozen, freeze dried and vacuum packed. Tubifex was cultured with vermicompost and sand as substrate with initial stocking density 40 g per m². Crude protein, crude lipid, ash content of Tubifex was found to be 49.88, 17.22 and 3.58% on dry weight basis. EPA (Eicosapentaenoic acid) and DHA (Docosahexaenoic acid) content were found to be 1.06% and 3.08% respectively whereas linoleic acid and linolenic acid contents were 15.86% and 3.86%. Protein content (64.66±0.49%) was found in green water enriched mixed zooplankton which was significantly higher than baker's yeast enriched zooplankton (63.23±0.14%) and zooplankton cultured in sewage (62.93±0.20%). Nutritional profile of pure culture moina and rotifer were enriched with emulsions of HUFA (Highly unsaturated fatty Acid) and Vitamin C. Highest levels of linolenic acid were found in the un-enriched moina, *Moina micrura* (20.19%). Significantly highest lipid content was found in green water enriched zooplankton (14.53±0.20%) and lowest value was recorded in baker's yeast enriched (11.76±0.13%) zooplankton. However, the lipid content of baker's yeast enriched and sewage cultured zooplankton (12.20±17%) did not vary significantly. Highest levels of linoleic acid and linolenic acid were found in the rotifer (*Brachionus calyciflorus*) enriched in the vitamin C emulsion (11.94% and 7.03%, respectively).

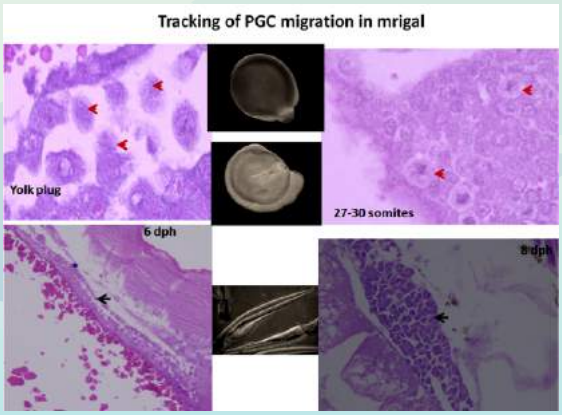
30. Feeding of high glucosinolates mustard oil meal based diet on nutritional and patho physiological responses of *Labeo rohita* and *Pangasianodon hypophthalmus*. 2012-2015

G. H. Pailan, B.K. Mahapatra, S. Munilkumar and N.P. Sahu

The study indicated that 25% of high glucosinolates containing (3.8 to 4.4 mg/g) mustard oil meal can safely be incorporated in the diet of Rohu and Pangasias without any adverse effect on feed intake, nutrient utilization and growth. Under pond condition monthly fish sampling data showed that glucosinolates containing diet i.e. total replacement groundnut oilcake with mustard oilcake, reduced the growth rate and increased FCR in both Rohu and Pangasias.

31. Identification and isolation of germ cells for transplantation in cyprinids. 2012-2015

S. Dasgupta, A.K. Pal, N.P. Sahu, G. Tripathi and B.K. Mahapatra



Stable expression of vasa mRNA elucidated during early stages, nearly at late blastula stage, thereafter sharply decline at hatching indicates zygotic transformation of vasa expression. Primordial germ cells (PGC) could be recognized at the yolk plug stage (7 hr post fertilization. Distinct gonad formation was observed approximately at 24 dph in mrigal. *In-situ* hybridization study using sense and antisense probe prepared from mrigal 3UTR sequence clearly revealed that vasa RNA expression decreased with the progress of growth in oocytes in mrigal. Isolation and enrichment of TYPE Aspermatogonial cells (Type A SPG) is successfully achieved in cyprinid species. Labelling of germ cell with red fluorescence cell linker has been done for tracking transplanted germ cells in recipient embryos.

Rohtak Centre

32. Up-scaling, demonstration and diversification of technologies for finfish and shellfish in inland saline soils. 2012 -2015

A.K. Reddy, P. Harikrishna, P.S. Ananthan and W.S.Lakra

Litopenaeus vannamei culture demonstrated at CIFE, Rohtak Centre with production ranging from 10.0 to 12.0 tos/ha. Three farmers groups have started commercial *L. vannamei* culture in 8.0 ha area at Baniyani and Meham villages of Rohtak district under the technical guidance of CIFE, Rohtak Centre for the first time in Haryana. The shrimps have grown to 23.0 to 32.5 g and 20.5 to 25.0 g in 120 to 150 days and 110 to 130 days at Baniyani and Meham respectively. The production ranged from 7.0 to 10.0 tons/ha. Culture of *Pangasianodon hypophthalmus* was demonstrated at CIFE, Rohtak Center in 0.20 ha pond. Stocked with 3500 Nos. of 30-35 g fingerlings in 5 ppt ground salinewater was achieved a production of 1850 kg (9,250 kg/ha) in 95 days.

GIFT tilapia and red tilapia were introduced from Arsen Bio-Tech & Farms (India) Pvt. Ltd., Nandamuru, Pedana Mandal, Krishna District, Andhra Pradesh. Salinity tolerance experiments were conducted on both the species with frequency of 5 ppt (0-50 ppt.) and 100 % survived up to 40 ppt and gradually 100 % mortality occurred at 45 ppt within 5 days and at 50 ppt 100 % mortality occurred during 48 hr. GIFT tilapia and Red tilapia of each 3000 nos. were stocked in two separate ponds of each 0.20 ha in 5 ppt inland ground salinewater in the month of November, 2014. Red tilapia completely died due to low winter water temperature (4-6^{0}C). However, GIFT Tilapia survived at low water temperatures.

300 Nos. of Amur brooder seeds and 2500 Nos. of Amur grow out seeds were obtained from Fisheries Research & Information Centre (Inland), Hesaragatta, Bangalore- 560 089 of Karnataka Veterinary, Animal & Fisheries University, Bidar, Karnataka in November, 2014. Grow out seeds were stocked in 4 ppt water and brooder seeds stocked in fresh water. Complete mortality occurred during winter due to low water temperatures.

5.2. Externally Funded Research Projects:

Board of Research in Nuclear Sciences

1. Studies on present status of marine radioecology and biodiversity at Tarapur coastal sites, Tarapur, Maharashtra. 2011-2015

Personnel : Chandra Prakash and Paramita B. S.

Budget : Rs. 175 lakh

Monitoring of physico-chemical and biological properties of water and sediment at inshore and offshore off Tarapur coastal site, Maharashtra

2. Studies on present status of marine radioecology and biodiversity at Kalapakkam coastal site. 2011-2015

Personnel : A. K. Pal and S. Munilkumar

Budget : Rs. 208.35 Lakhs

Total 50 species of Phytoplankton were identified and recorded the common species are *Rhizosolenia robusta*, *Navicula* sp.*Tricodesmium* sp , *Odontella* spp, *Planktonella sol*, *Chaetoceros* sp.

Total 20 species of Zooplankton were identified and recorded the common species are *Oikopleura* sp, *Hydromedusa,* Copepod nauplii, Crab zoea, Mysis larvae.

Total 20 species of Crustaceans were identified and recorded the common species *Portunus sanguinolentus*, *Charybdis lucifera, Penaeus semisulcatus,Calappa lophos*.

Total 76 species of Mollusc were identified and recorded the common species are *Thais rudolfi*, *Babylonia spirata, Rapana rapiformis*, *Octopus aegina, Sepia aculeata*.

Total 85 species of Fishes were identified and recorded the common species are *Leiognathus spp, Otolithes spp, Cynoglossus spp, Nibea spp.* Radionuclides like ^{90}Sr, ^{3}H and ^{137}Cs were analysed and calculated in seawater, sediment and biological samples at ESL, Kalpakkam.

A total number of 79 sediment, 90 water and 32 biological samples were collected and pre-processed for the counting of radionuclides. Seawater ^{90}Strontium was analysed following TBP method and counted by Low background Beta counter which a concentration range between 0.23±0.60 to 3.1 ± 0.51 mBq/l. Seawater ^{137}Cesium was estimated by AMP method and counted by 33% HPGe which showed that concentration was below detectable level.

3. Studies on the present status of marine radioecology and biodiversity around nuclear plant site in Jaitapur, Maharashtra. 2011-15

Personnel : S.K. Chakraborty, B.N. Dilip, A.K. Jaiswar and A. Pawase

Budget : Rs. 68.25 Lakhs

As per schedule the data on phytoplankton, zooplankton, fish, benthos and sediment has been collected. The Jaitapur Project was adjudged the best among the four in the megaproject in term of collection, analysis and interpretation of the data. Final report on the project is being prepared.

BRNS

4. Baseline riverine radioecology and biodiversity studies around the proposed NPP site in Jabalpur (Madhya Pradesh) 2011-2015

Personnel : S. Dasgupta, S.P. Shukla
P.M. Ravi, M.K. Mishra (BARC)
P.K. Srivastava (NPCIL)

Budget : Rs. 202.2 lakh

Total 54 species of algae were reported during the period. Algal community in Narmada river was represented by primarily chlorophyceae, bacillariophyceae, cyanophyceae, chrysophyceae, euglenophyceae and dinophyceae.

Phytoplankton population was most diverse in summer with index value of 1.29, followed by monsoon (1.25), post monsoon (1.22)and least in winer (1.76).

Among thirty eight species of aquatic macrophytes, Poaceae and Cyperaceae were most dominant families represented by five species each. The diversity of macrophytes at Chutka and Patha was more similar (83%) than other sites.

Five groups of zooplankton were recorded as follows: protozoa, rotifera, cladocera, copepoda and bivalve larvae and most diverse community was recorded at Tewar and least diversity index was at Bargi.

Benthic communities showed seasonal variation which was related to physicochemical parameters of habitat environment.

137 Cs indifferent fish species, freshwater shrimp (*Machrobranchium choprai*), and in sediment was reported in the below detectable level range to 0.3 Bq/Kg dry wt.

40K average level in freshwater shrimp and sediment was 164.7±11.6 Bq/Kg dry wt., whereas it ranged between 138.0±4.2 and 207.9±12. Bq/Kg dry wt in different fish during the period of study.

BRNS

5. Optimum utilization of locally available plant-based ingredients for aquafeed through electron beam irradiation. 2012-2015

Personnel : P. Sardar, G. H. Pailan and S. Ganesh

Budget : Rs. 18.035 Lakhs

A feeding trial was conducted to evaluate the optimum utilization of e-beam irradiated (at 25 KGy) *Jatropha curcas* kernel meal (IJKM) in the diet of rohu (*Labeo rohita*) for 6 weeks period. Five isonitrogenous (30% CP) and isoenergetic (390 kcal/100 g GE) diets such as T0R (0% inclusion of IJKM), T5R (5% inclusion of IJKM), T10R (10% inclusion of IJKM), T15R (15% inclusion of IJKM) and T20R (20% inclusion of IJKM) in replacement of soyabean meal were formulated and prepared. During the last 15 days of experiment, 0.5% chromic oxide as external marker was mixed in all the experimental diet for digestibility study. 225 acclimatized rohu fingerlings (avg. b. wt 14.10 ± 0.01 g) were randomly distributed in 5 experimental groups with three replicate under each containing 15 fish per tank. Fish were fed with respective experimental diet on satiation basis twice daily. Digestibility of DM, CP, crude fat and energy of diet did not differ in the rohu of T0R, T5R and T10R, but fish of T15R and T20R showed lower digestibility. Results indicated that weight gain, length gain, SGR, FCE, PER, ANPU, HIS, ISI and survival rate of fish were significantly decreased but FCR was significantly increased on higher inclusion of IJKM beyond 10% level in the experimental diet of rohu. Serum ALT, AST and glucose increased whereas serum total protein, albumin, globulin and A:G ratio decreased at higher inclusion level of IJKM in the diet of experimental fish. Hb, PCV, TEC, decreased but TLC increased in fish fed diet with higher inclusion level of IJKM. Higher incorporation level of IJKM in the diet decreased liver catalase and SOD activity in fish. The respiratory burst activity (NBT reduction) of neutrophils of fish decreased with increasing inclusion level of IJKM in the diet. Rohu could tolerate IJKM up to 10% with replacement of 33% soyabean meal might be due to reduction of PE through irradiation.

DBT

Department of Biotechnology

6. Development of fluorescent whole cell optical fibre biosensor for heavy metal pollutants. 2013-16

Personnel : A. Chaudhari, P. Gireesh Babu, Ramkrishna Sen (IIT-Kharagpur) and P. Roy Chaudhuri (IIT-Kharagpur)

Budget : Rs. 44 Lakh

Bacterial biosensors for sensing heavy metals Hg, Pb, Cd and Zn were tested for induction by other heavy metals like nickel, copper, chromium, etc. to confirm the response range. A method to measure fluorescence by real time PCR was developed and standardized. The method was also used to measure fluorescence response in mixtures of heavy metals and in natural samples in which heavy metals have been measured by atomic absorption spectrophotometry.

7. Utilization of detoxified rubber seed cake in aqua feed. 2014-17

Personnel : N.P. Sahu

Budget : Rs.32.3 Lakhs

DBT

Recruitment of the SRF was done for the project in order to perform the laboratory work and complete the targets within the stipulated time. The rubber seed was obtained from Tripura. As soon as the rubber seed was obtained, it was ground and the proximate analysis was carried out. The rubber seed was found to have 22% crude protein and 33% crude lipid, on dry weight basis respectively. This was followed by the estimation of the antinutritional factors, phytic acid, in the rubber seed meal. It was found that rubber seed meal contains 3.15mg/g of phytate. After the estimation of phytate in the rubber seed meal, work was started regarding practically feasible detoxification of phytate in the meal. Protein isolate preparation was standardized and it was found that rubber seed protein isolate, besides being a good protein ingredient, also contained lesser amount of phytate than the meal. Further the fatty acid profiling of the rubber seed was carried out using GCMS. It was found that rubber seed oil has good amount of linoleic acid comparable to soyabean oil.

8. Improvement of safety and quality of transglutaminase mediated restructured fish products by bioactive phenolics and terpenoids (under DBT-Twinning). 2012-15

Personnel : G. Venkateshwarlu, A. K. Balange and K. Nagalakshami

Budget : Rs. 61.11 lakhs

DBT

Experiments were conducted to prepare pink perch mince sausages with transglutaminase and tannic acid. Concentration of transglutaminase and tannic acid were standardized and synergistic effect of 1% microbial transglutaminase with 0.25 and 0.5 tannic acid (as a phenol source) was found suitable for prepared sausages. Product was found acceptable for 12 days in refrigerator.

Essential oils from different spices were separated and further antimicrobial and antioxidant study was proposed to be conducted by the collaborating institute at CoF, Tripura.

Preparation of spice mixture, to be used for fish sausages and fish vadi, was standardised. Pangasius mince emulsion sausages were developed using microbial transglutaminase and spice mix. Prepared sausages were found in acceptable condition for 240 days at -18^{0}C. Development of Pangasius fish vadi and fish chocolate are in progress with trial experiments showing acceptable results.

Department of Science and Technology - Science and Engineering Research Board

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9. Biochemical composition of Bombay duck fish, and function characterization of its muscle proteins. 2014

Personnel : B.B. Nayak and A. Balange
Budget : Rs. 21.8 Lakhs

The fishes were collected periodically during post-monsoon months of August 14, September 14, November 14 and pre-monsoon months of February 15 and March 15 from nearby Versova fish landing centre. Fishes were kept in ice, segregated based on gender, gonad maturity stages and sizes. The fishes from each group were cleaned thoroughly using potable water, beheaded, gutted and cut into 3 portions i.e. head, middle portion and tail. Each portions from the same group were pooled together and homogenized. The homogenates were analysed for proximate composition i.e. moisture content, ash content, crude fat and crude protein. The fishes could be categorised in to 3 major length classes i.e. 150-199 mm, 200-249 mm and 250-299 mm. The female fishes dominated in samples of all the months. The females of Bombay duck showed Gonad maturity stages I to VI. However it did not follow any pattern which emphasises the fact that Bombay duck is a protracted spawner. The proximate composition among different body portions did not vary significantly though there is a slight variation in proximate composition of fish in post-monsoon and pre- monsoon months.

National Agricultural Innovation Project

National Agricultural Innovation Project

10. Livelihood and nutritional security of Tribal dominated area through integrated farming system and technology model. 2009-14

Personnel : Kiran Dube Rawat,V.K. Tiwari, P.S. Ananthan, K.D. Raju and M. L. Ojha

Budget : 102.80 Lakh

During the year 2014-2015, cage culture of carps as done and total of 9500 Major carp fingerlings were harvested after rearing for a period of 65 days, which were stocked in the grow out culture ponds for further culture.

11. NAIP sub-project: A value chain on fish production in fragile agricultural lands and unutilized aquatic resources in Maharashtra. 2008 - 2014

Consortium Leader : Dr. W.S. Lakra

Consortium Principal Investigator: Dr. A.K. Reddy

Budget : Rs. 749.80

Successfully demonstrated reclamation of salt affected sugarcane fields through aquaculture and sub surface drainage (SSD) system in the four Western Maharashtra Districts i.e., Pune, Satara, Sangli and Kolhapur. The sugarcane production in these fields ranged from 45.0 to 65.0 tons / 0.40 ha from the baseline production of 15 to 20 tons / 0.40 ha. Soybean production enhanced from baseline production of 6.0 to 8.0 quintals to 18.0 to 20.0 quintals per 0.40 ha. In SSD water pond carp were cultured and obtained an average production of 850 kg/0.2 ha (4250 kg/ha.)

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NFBSFARA

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12. Defense genes of tiger shrimp (*Penaeus monodon*) with respect to bacteria (*Vibrio harveyi*) and white spot virus (WSSV) infection. 2012 -2016

Personnel : K. V. Rajendran and M. Makesh

Budget : Rs.242.20 lakh (CIFE - 71.45 lakh)

Complete cDNA sequence of *Pm*Spatzle (1195 bp; extracellular ligand of Toll) and partial sequencing of *Pm*Cactus (1534 bp; mammalian IkB homolog) and *Pm*Dorsal (1155 bp; mammalian NF-kB homolog) genes involved in Toll pathway from *P. monodon* was generated. Studied the ontogenic expression of the immune genes (*Pm*Toll, *Pm*MyD88, *Pm*IRAK-4, *Pm*TRAF6, *Pm*Cactus and *Pm*Dorsal) in different developmental stages of shrimp such as egg, nauplii, zoea, mysis and post larvae. Elucidated the expression profile of the immune genes subsequent to challenge with WSSV by different routes:immersion (in post-larvae and juvenile) and injection (in adult).

13. Capture and removal of ammonia from fish processing wastewater using Archea. 2011-16

Personnel : B.B. Nayak

Budget : Rs. 227 lakhs (CIFE share Rs. 135 lakhs)

National Fund for Basic, Strategic and Frontier Application Research in Agriculture

The project deals with the enhancement and application of nitrifiers in nitrogen waste remediation of fish processing waste water. Nitrification is studied in ammonia oxidizing autotrophic archaea (AOAs) and bacteria (AOBs). Heterotrophic bacteria are also known to remediate nitrogenous wastes by simultaneous nitrification and denitrification (SND). Potential heterotrophic bacteria were isolated from fish processing waste water and characterized for their activity. The heterotrophic bacteria were extremely efficient owing to their rapid growth. These heterotrophic bacteria were grown as biofilms on moving bed bioreactor carriers and applied in remediation of fish processing waste water. 96% of the Kjeldhal nitrogen could be removed by a group of heterotrophs by SND processes. Significantly, heterotrophic bacteria isolated were earlier unreported for some of the specific ammonia reducing activities.

Enrichment and culturing of autotrophic ammonia oxidizing archaea is rarely achieved and so far only one AOA has been cultured to purity. Three different upflow reactors were set up under this project using dry and wet paddy field soils where archaeal abundance has been reported. The reactors setup exhibited competitive elimination of bacteria from the system in 90 days time and AoAs enrichment has been continuing for last eight months. The ammonia remediation rate (9%) shown at the beginning of the reactors (due to archaeal and bacterial joint efforts) grew gradually coinciding with the elimination of bacteria reaching a level of 99%. This indicated the rate enhancing ability of the archaea, once set up for the remediation process.

14. Stock *characterization, captive breeding, seed production and culture of Hilsa* (*Tenualosa ilisha*). 2012-2017

Personnel : S. Dasgupta and G.H. Pailan

Budget : Rs. 139.83 lakh

Hilsa maintained plasma osmolality levels between 266 and 417 m Osmol/kg during migration from sea mouth to upstream of river.Plasma concentrations of sodium, potassium and chloride were in the range of 118.4 to 140.2 mmol/L, 11.2

National Fund for Basic, Strategic and Frontier Application Research in Agriculture

to 16.0 mmol/L and 118.0 and 163 mmol/L respectively during migration. Higher plasma osmolality and chloride level were recorded in marine environment. Wide variation in % GSI values was observed in the migratory Hilsa throughout the year. Although the higher average GSI values were recorded in October and December in female and male respectively. Maximum GSI values was well correlated with maturational stages in females, however, in males, such correlation was low. Maximum milting males were noticed in the month of September, in spite of maximum GSI in December. Changes in sex steroids, such as, estradiol, testosterone and 11-KT indicated a possible role of estradiol and 11-

National Fisheries Development Board

15. National surveillance programme for aquatic animal diseases. 2013 - 2018

Personnel : K.V. Rajendran, K. Pani Prasad and Gaurav Rathore

Budget : Rs.149.70 Lakhs

Baseline data have been collected from 112 farms from 5 districts belonging to Maharashtra (Raigad and Thane) and Gujarat (Navsari, Valsad and Surat).

Organised awareness programmes on aquatic animal diseases in selected districts of Maharashtra (Raigad and Thane) and Gujarat (Valsad)

Shrimp samples (*Litopenaeus vannamei* and *Penaeus monodon*) from 31 farms located in Raigad and Thane districts of Maharashtra and Navsari district of Gujarat were collected and screened for viral pathogens such as white spot syndrome virus (WSSV), hepatopancreatic parvovirus (HPV), infectious hypodermal and hematopoietic necrosis virus (IHHNV), monodonbaculovirus (MBV) and yellow head virus.

16. Genetic conservation and live gene pool of Mahasheer fish in Indrayani river. 2010-2015

Personnel : Gopalkrishna, S N Ogale, N. K. Chadha, V. K.Tiwari, Rupam Sharma and Mahesh Mahajan

Budget : Rs.139 lakh

During the period reported, the Mahseer brooders were bred in the hatchery and the seed was reared in the nursery at FONA, Talegaon; the seed was further reared in the river cages at Dehu. During the monsoon, there was dislocation of cages that was set in place after the rainy season and more than 15,000 fish fry were released for restocking in the river. More than 6000 advance fingerlings were released in the Indrayani River during this period. From August to December 2014, the milt of Mahseer was collected for cryopreservation and was maintained at the farm laboratory. The chemical and biochemical composition of the milt was analyzed. The recovery of the spermatozoa and morphological structure was also studied during and after freezing.

The farm reared brooders of *Tor putitora* were bred from August to December 2014

The males weighing 200 gms and above were in perfect oozing condition while the females were still getting ready

Rajiv Gandhi Science & Technology Commission

RGSTC
Rajiv Gandhi Science & Technology Commission

17. Accelerated salt fermentation of Indian Mackerel *Rastrelliger kanagurta*, through application of fermenting mircroflora. 2013-16

Personnel : B. B. Nayak and L. Manjusha

Budget : Rs. 31 lakhs

The Indian mackerels were fermented using a combination of dry salting and wet salting in microaerophilic condition. Representative bacterial isolates from each stage of fortnightly samplings were picked up identified, verified for their salt tolerance and fermentation potential. The fermentation potential was mainly studied from their capabilities to show lipolytic and proteolytic activities. Out of the eighty representative isolates, one major bacterial player and three minor players were identified. A set of six vats, two each were used for fermentation of mackerel without any enrichment, with the consortium of all the selected isolates, and with only the major player. The biochemical, microbial and sensory analyses were done at fortnightly interval. The formation of characteristics flavour, colour and texture were considered as end point. The single species inoculated vats matured in 75 days, the consortia inoculated vat matured in 105 days while the control vats matured after 120 days. The experiment was further repeated with single species and control.

The samples were packed and sent to North eastern states of India where fermented fishes are consumed in large quantities. The users of salt fermented fishes had very high opinion while non-eaters of salt-fermented fish suggested reduction of salt. Subsequently the bacterial isolates were subjected to growth at different salt conditions. Since most isolates grew at 5% salt, experiments were set at 5% salt. Unfortunately at 5%, 12%, and 20% salt, the spoilage flora overtook the fermentation flora causing fish to spoil. Bacterial fermentation being a dynamic process, fermentation progresses during storage yielding over fermented fish with sweetish and alcoholic smell. The matured products were exposed to irradiation does of 1-5KGy and the product quality were tested at monthly interval. The best result was obtained by 5KGy dose. Subsequent experiment was done with 5KGy dose and the product has been found to be stable beyond 6 months of storage.

18. Pilot scale demonstration of value added products from surimi. 2014-17

Personnel : A K Balange and Martin Xavier

Budget : Rs. 39.67 lakhs

Preparation methods of many value added products from surimi were standardised, products were panel tested and shortlisted to impart training. Six training programs have been conducted at CIFE campus, Arnala Fishermen coop society (Palghar Dist), Mahim koliwada (Mumbai Dist), Jaigarh (Ratnagiri Dist), Juwe, (Ratnagiri Dist) and Panvel (Raigarh Dist). A total of 132 fishermen were trained on various products that can be prepared using mince. Small scale preparation of hygienic surimi was also demonstrated to the trainees.

Chapter 6

Extension Achievements

6.1. Short Term Training Programmes / Special Training Programmes for NE States/ Other States etc. Organized

Title	Venue	Duration	No. of Participants
Handholding training programme on freshwater aquaculture	IESWM, Department of Environment, W.B.	22-26 Apr, 2014	23
On-Job Training Programme on Culture of carp & ornamental fish and fish processing	JLN College, Rohtas, Bihar (B.Sc. Industrial Fish & Fisheries students)	21 Apr -7 May, 2014	21
Ornamental fish breeding and culture	NFDB, Hyderabad	24- 30 Jun, 2014	24
Magur breeding & hatchery management	CIFE Centre Powerkheda	02-08 Jul, 2014	8
Freshwater aquaculture	NFDB, Hyderabad	04-10 Jul, 2014	25
Freshwater aquaculture	NFDB, Hyderabad	30 Jul- 5 Aug, 2014	26
In-Plant Training programme	Kolkata centre	31 Jul- 27 Sep, 2014	21
Carp breeding and hatchery management	CIFE Centre Powarkheda	16-22 Jul, 2014	17
Seed production and culture of Magur	CIFE Centre Kakinada	01-07 Aug, 2014	4
Pangusius breeding & carp Seed production	Samra, Dhantri Rajiv Gandhi Fish Farm, Raipur Chattisgarh	03-05 Aug, 2014	35
Integrated fish farming system	State Fisheries Dept . Raipur	03-05 Aug, 2014	46
Ornamental fish breeding & culture	NFDB, Hyderabad	19-25 Aug, 2014	26
National Level Training Programme on Entrepreneurship development in ornamental fish breeding & culture	CIFE,Mumbai	19-25Aug, 2014	9
Carp culture practices and recent advances	CIFE Centre Powarkheda	01-06 Sep, 2014	23
Seed production and culture of Magur	CIFE Centre Kakinada	08-12 Sep, 2014	15

Freshwater aquaculture	NFDB, Hyderabad	09 to 15 Sep, 14	25
Brackishwater finfish and shellfish aquaculture	CIFE Centre Kakinada	22-26 Sep, 2014	15
In Plant Training programme	CIFE Centre Kakinada	30 Sep-29 Nov 2014	21
On-Job training programme on Fish processing technology, ornamental fish breeding & culture	CIFE Centre Kolkata	09-22 Oct, 2014	32
Inland saline water aquaculture management practices	CIFE Centre Rohtak	13-17 Oct, 2014	17
Soil and water quality management in aquaculture	CIFE Centre Rohtak	20-25 Oct,, 2014	25
Inland saline water aquaculture management practices	CIFE Centre Rohtak	27-31 Oct, 2014	44
Disease diagnosis, control and treatment measures in aquaculture	CIFE Ccentre Kakinada	27 Oct - 02 Nov, 2014	10
Advances in carp culture practices	CIFE Centre Powarkheda	27 Oct - 01 Nov, 2014	11
Ornamental fish breeding & culture	NFDB, Hyderabad	07-13 Nov, 2014	25
Freshwater pisciculture	World Bank financed Assam Agricultural Competitiveness Project	01-05 Dec, 2014	51
Freshwater aquaculture	NFDB, Hyderabad	07 – 13 Dec, 2014	25
Training on Fish nutrition and feeding strategies		16- 22 Dec, 2014	06
Matsya palan (in Hindi)	CIFE Centre Powarkheda	16-20 Dec, 2014	24

Ornamental fish breeding & culture	MPEDA	02-06 Jan, 2015	21
Fish and prawn culture (in Hindi)	CIFE Centre Powarkheda	28 Jan - 06 Feb, 2015	20
Fish and prawn culture (Hindi)	CIFE Centre Powarkheda	09-18 Feb, 2015	19
Field training programme for DoF, Kerala	CIFE Centre	16-20 Feb, 2015	10
Ornamental fish breeding & culture	NFDB, Hyderabad	17-23 Feb, 2015	28
Fish processing and value added fish products	NFDB, Hyderabad	23 Feb - 01 Mar, 2015	20
Mithe pani me machhli palan	Khagaria ,Bihar	24 Feb-02 Mar, 2015	25
Fish and prawn culture (Hindi)	CIFE Centre Powarkheda	19-28 Feb, 2015	20
Important aspects of fisheries & aquaculture	CIFE Centre Powarkheda	02-07 Mar, 2015	11
Data analysis through statistical software SPSS	CIFE, Mumbai	23-27 Mar, 2015	24
ish nutrition, feeding strategies	NFDB, Hyderabad	03 - 10 Mar, 2015	25
Mithe pani me machhli palan	Bhojpur, Bihar	10-19 Mar, 15	25
Mithe pani me machhli palan	Sheohar, Bihar	11-19 Mar, 15	14
Mithe pani me machhli palan	Buxar, Bihar	20-26 Mar, 2015	19
Mithe pani me machhli palan	Jehanabad, Bihar	27 Mar-02 Apr, 2015	25
Fish and prawn culture (Hindi)	CIFE Centre Powarkheda	23 Mar - 1 Apr, 2015	14

Fish Farmers' Day at CIFE HQ

About 50 ornamental fish farmers, breeders, domestic traders, exporters and aquarium accessories traders participated in the Fish farmer's day celebrated at ICAR-CIFE, Mumbai on July 10, 2014. Deliberations included expert interventions by Mr. Mehmood Syed, Ornamental fish breeder and exporter, Dr. K. Palanisamy, Deputy General Manager NABARD, Mumbai and Mr. Anil Kumar, Deputy Director, MPEDA. Dr. W.S. Lakra, Director, CIFE, Mumbai inaugurated the meet. The need for development of an association of ornamental fish farmers was felt to take care of the interests of this sub sector. A concentrated effort was felt necessary to identify rare domestic breeds that command a high price in the domestic market and breed them for gaining economic stability and conservation of biodiversity. Lack of proper guidelines for ornamental fish culture, especially with respect to live feed, quality enhancement, transportation, price stabilization and standardization are some major issues that have to be dealt with on a war footing. The stakeholders were advised to develop a strong association in order to project the demands of the sector effectively.

6.2. Farmers' meet/Awareness Programmes etc. organised

Event	Venue	Duration	Participants
Awareness Workshop on "National Surveillance Programme for Aquatic Animal Diseases"	Dahanu, Maharashtra	07 Jun, 2014	30 farmers
Awareness-cum-Workshop on Fish milt cryopreservation technology	Aizawl, Mizoram	05 -07 Feb, 2015	65
Fisheries entrepreneurship development on integrated farming systems for improved and diversified livelihood options for small and marginal farmers of NEH	AAU Johrat	10-14 Feb, 2015	65
Awareness Workshop on "National Surveillance Programme for Aquatic Animal Diseases"	Valsad, Gujarat	22 Feb, 2015	25
Ornamental Fish Farmers' Day	ICAR-CIFE, Mumbai	10 Jul, 2015	100
Training-cum-Workshop on "Aquaculture and Fisheries Management for Food and Nutritional Securities in Arunachal Pradesh"	Itanagar, Arunachal Pradesh	10-11 Jun, 2014	70
Shrimp farmers' awareness programme on Surveillance of Aquatic Animal Diseases	Dahanu Maharashtra		23
Shrimp farmers' awareness programme on Surveillance of Aquatic Animal Diseases	Valsad, Gujarat		14
Progressive Fish Farmers Meet – Development of database & streng hening professional linkages (farmers participated from W.B, Bihar, Jharkhand and Eastern U.P)	CIFE, Mumbai	23 Aug, 2014	38
Database &social security of fishers	FISHCOPFED, New Delhi	28 Aug, 2014	30
Farmers' meet	CIFE Centre, Rohtak	13 Nov, 2014	25
Fish collection and transportation scheme for fish farmers of Sunderban, W.B.	Nature Environment and Wildlife Society (NEWS) Kolkata	12 Dec, 2014	35

6.3 Exhibitions organized

S. No	Events	Venue	Duration
1.	Versova Koli Sea Food Festival 2015	Versova Fishing Village, Mumbai	9-11 Jan, 2015
2.	'Kisanmela' organized by the Dept. of Agriculture, Hoshangabad	Krishi Upaj Mandi, Hoshangabad	20 Sep, 2014
3.	'Krashimela' organized by the Dept. of Agriculture, Hoshangabad	Krishi Upaj Mandi, Hoshangabad	15-17 Oct, 2014
4.	"Career Mela" organized by the S.N.G. College, Hoshangabad	N.M.V. College, Hoshangabad	25-26 Feb, 2015

6.4. Visit Coordination

S No	Date	Visitors	No. of Visitors
Powarkheda			
1	28 Apr, 2014	Newly recruited State Govt. Officers from R.C.P.V. Academy, Bhopal	08
2	23 May, 2014	A team of farmers from Dist. Chindwara	14
3	23 May, 2014	A team of Female farmers from Dist. Chindawara	30
4	17 Jul, 2014	Students and staff from Tagore Public School, Seoni-Malwa	16
5	23 Jul, 2014	Under 'ATMA' program Farmers and staff from Dist. Vidisha	42
6	06 Aug, 2014	Under ATMA Pariyojana from Vidisha District Farmers	42
7	12 Aug, 2014	Under 'MPVA' Pariyajana from block Amala & Bhaisdehi, Dist., Betul (Ladies farmers)	60
8	13 Aug, 2014	Under 'MPVA' Pariyajana from block Chicholi, Shahpur, Dist, Betul (Ladies farmers)	60
9	21 Aug, 2014	Ladies farmers from Ghodadongri Dist., Betul .	60
10	26 Aug, 2014	Under Jaivik Kheti Prosyahan Yojana from block Khalwa, Dist., Khandwa farmers	60
11	28 Aug, 2014	Under 'MPVA' Pariyajana from block Adhaner, District Betul ladies farmers	30
12	30 Aug, 2014	Under 'MPVA' Pariyajana from Dist. Betul, ladies farmers	30
13	01 Sep, 2014	Farmers from block Bhimpur, Betul	30
14	11 Sep, 2014	Students, research scholar and faculty from Dept. of Applied Aquaculture, B.U., Bhopal	12

15	16 Sep, 2014	Ladies farmers from block Khalwa, Dist. Khandwa	30
16	17 Sep, 2014	Farmers from block Kesla	15
17	27 Sep, 2014	Farmers from block Chicholi, Dist. Betul	50
18	31 Oct, 2014	B. Sc. Students (Girls) from Pandit Jawaharlal Nehru MahaVidhyalaya, Amla (M.P.) along with the faculty	18
19	05 Nov, 2014	Girl students from Govt. Home Science College, Hoshangabad under NSS program	50
20	11 Dec, 2014	Under 'ATMA pariyojna' from Dist. Vidisha, Farmers	48
21	05 Jan, 2015	XI Class students and staff from Jawahar Navodaya Vidyalaya, Powarkheda	07
22	21 Jan, 2015	Scout students of different districts and staff from Jawahar Navodaya Vidyalaya, Powarkheda	155
23	23 Jan, 2015	Farmers from Farmers Training Centre, Powarkheda,	20
24	12 Feb, 2015	Students alongwith the staff members from Sadhu Vasavani Mahavidhyalay, Bairagarh, Bhopal	12
25	25 Feb, 2015	Farmers from Tah. Ganjbasoda Dist. Vidisha under 'Mukhyamantri Khettirth Yojana'.	64
26	26 Feb, 2015	Farmers from Tah. Athner, Dist. Betul under 'Krishi me Mahilayoki Bhagidari' program	30
27	03 Mar, 2015	Farmers from Dist. Ashoknagar	18
28	04 Mar, 2015	Under 'ATMA' pariyojana MAPVA mahila farmers from Dist. Betul	30
29	16 Mar, 2015	B.Sc. students from Govt. N.M.V. Hoshangabad,	06
30	19 Mar, 2015	Under 'ATMA' pariyojana MAPVA mahila farmers from Dist. Betul	30
31	21 Mar, 2015	Under 'ATMA' pariyojana MAPVA mahila farmers from block Khalwa Dist. Khandwa	30
32	23 Mar, 2015	Under 'ATMA' pariyojana MAPVA mahila farmers from Dist. Betul	30
Rohtak			
1.	03 Jun, 2014	Farmers and State Fisheries Officials, Haryana	10
2.	07 Aug, 2014	State Fisheries Officials, Haryana	12
3.	07 Aug, 2014	Farmers from Haryana State	08
4.	24 Sep, 2014	Farmers and State Fisheries Officials, Haryana	06
5.	07 Oct, 2014	Farmers from Haryana State	04
6.	03. Dec, 14	Farmers from Haryana State	08
7.	09 Mar, 2015	Trainees from 101th FOCARS, NAARM	05
Kakinada			
1.	18-21 Jun, 2014	B.F.Sc Students from College of fisheries, Assam State	25
2.	10 Nov, 2014	Fishery officials from Govt. of Erethria	05
3.	10 Dec, 2014	B.Sc. students P.R. Govt. College, Kakinada	49
4.	19 Dec, 2014	Fish farmers from Haryana	06
5.	16-17 Jan, 2015	B.F.Sc. students from college of fisheries, Chhattisgarh State	25
6.	20-21 Jan, 2015	In-Service Fishery Officers from Dept. of fisheries, Kerala	06

6.5. Transfer of Technology and Demonstration/Product Development

Fish Milt Cryopreservation Technology, Aizawl, Mizoram

Beneficiaries : State fisheries officials and entrepreneurs

Impact : The state fisheries officials were eager to adopt the technology and were ready to take future demonstrations and advanced training. Liquid Nitrogen containers were handed over to the department in the presence of the Fisheries Minister

Raising carp fingerlings in cages and pens, Dimbhe Reservoir, Dist. Pune

Beneficiaries : Tribals and locals

Impact : Installation of cages practicing cage aquaculture and pen culture for in situ rearing of fingerlings of IMC was demonstrated in Talab with community participation at each step of operation

Carp and prawn seed production and rearing fish and prawn culture techniques, CIFE Centre, Powarkheda.

Beneficiaries : Fish farmers/entrepreneurs, students and other visitors visiting the centre fortechnical guidance.

Impact : Fish culture is now being adopted on scientific lines by fish farmers of Bihar and local farmers who has undergone training and visited this centre.

Commercial farming of *L. vannamei* in salt affected soils, Rohtak and Hissar districts of Haryana

Beneficiaries : Farmers

Impact : The demonstration trials have been successfully completed showing an average production of 7.0 to 10.0 tons/ha. Seeing the successful results, the technology had been accepted by the State Fisheries Department, Govt. of Haryana, which would be promoted under RKVY Scheme with 50% subsidy to the farmers. The shrimps have grown to 23.0 to 32.5 g and 20.5 to 25.0 g in 120 to 150 days and 110 to 130 days at Baniyani and Meham respectively.

Carp hatchery and seed production, Dimbhe Reservoir, Dist. Pune

Beneficiaries : Tribals and Locals

Impact : Community is producing carp seed from the hatchery set up and utilizing the resources for increasing fish production from the reservoir. The community is also getting acquainted with the hatchery operations. Ice block making machine is being operated by community at Dimbhe reservoir for short term holding of fish catch.

6.6. Activities under Tribal development programme

Kastodanga II Gram Panchayat, Haringhata Development Block, Dist. Nadia, West Bengal

- 25 beneficiaries were provided with 30 no./head of day old Khaki Campbell and 4 kg of duckling feed. . A follow up is under progress and they are regularly being monitored and technically supported.

Bali Island, Sunderban, South 24 Parganas, West Bengal

- A portable carp hatchery has been installed for training of tribal farmers at CIFE Centre, Kolkata. Ten farmers were provided with starter inputs for culture of freshwater prawn with carps. A follow up by the scientists of Kolkata center is undertaken with full technical support.

Tribal Farmers orientation and awareness program in Shahpur, Village, District Thane, Maharashtra.

- A one day orientation cum awareness program was organized on 18th March,2015 for the tribal Farmers in Shahpur, District Thane, Maharashtra. Around 170 tribals including women participated from nearby villages. Fish culture technologies suitable for them and their benefits were explained.

Fish pond constructed at Thane for tribal

- A community fish pond (100 x 100 feet, 6 feet deep) was constructed at Shirol village, Shahpur, Thane, a complete tribal area. About 100 tribal families will be benefitted by this activity.

6.7. Print media (Published in news/online/newspaper)

- A wide coverage of exhibitions and technical information rendered by CIFE centre, Powarkheda during exhibitions was given in leading local Newspapers.
- Breakthrough in shrimp farming in inland saline areas was published in ICAR Website, 13th November, 2014 http://www.icar.org.in/en/node/8305
- Article titled 'New tech gives a boost to shrimp farming in Punjab & Haryana, Chandigarh' July 30, 2014, http://www.business-standard.com/article/markets/new-tech-gives-a-boost-to-shrimp-farming-in-punjab-haryana-114073001635_1.html
- *Kolleru chepalu bhale bagu* a press publication by Dr. Arun Sharma , Mr. R. R.S. Patnaik and Assam Fisheries Students was published on 13 November2014 on Eenadu-Krishna Dist (Daily Telugu News paper)
- *Chepala pempakam parisi linchina* (Assam students) was published on 13 November 2014, Andhra Jyoti Kaikaluru Edition
- *Kollerulo chepalsagu vidhanam bhesh* was published on 13 Novemebr 2014 by Sakshi Daily Telegu Krishna Dist edition
- *Nalla Jaati chepalapi Assam vidhyarthula adhyanam* was published on 18 November 2014 in Andhra Jyothi Kaikaluru Edition
- Andhra chepala sagu adursh was published on 18 November2014 in Sakshi Daily Telugu News Paper, Krishna District
- Dr. Megha Bedekar published the following articles in the newspaper *Kheti duniyaan (2014), Patiyala*

  - त्जलिय मछलियों के रोग

  - गजल के वातावरण का मछलियों के स्वस्थ्य पर प्रभाव

- The event of Calbasu stocking in Narmada River at the occasion of 'Sand Lake Festival' organized by the Hoshangabad District authorities on 27 February 2015 was well covered in local newspapers.

6.8. TV/Radio Talk delivered

S.No	Name of the person who delivered	Name of the talk	Date	Name of the programme
1	Dr. J. Krishna Prasad	*Mariyu pempakam lo adhunika paddathulu*	10 Apr, 2014	All India Radio Visakhapatnam
2	Dr. Somdutt Dr. R. K. Upadhyay	Centre's activities and pre-monsoon pond preparations	25 Apr, 2014	Bhopal Doordarshan Bhopal under 'Krishi Darshan' program
3	Dr. Mahapatra	*Aquarium-e Joloj Udvit Bosanor Gurutwab*	30 Jul, 2014	Annadata, Programme of ETV Bangla
4.	Dr. Mahapatra	*Punti Macher Pronodito Projonon*	23 Aug,2014	Annadata, Programme of ETV Bangla
5	Dr. R.K. Upadhyay	Live telecast on 'Krashak Sangosthi' at KVK centre Dist. Raisen	30 Sep, 2014	Bhopal Doordarshan, Bhopal
6	Mr. V. Harikrishna	Shrimp culture in saline affected soils	25 Nov, 2014	All the local channels
7	Dr. A. K. Reddy	Shrimp farming in saline affected soils	28 Nov, 2014	All the local channels
8	Dr. Mahapatra	Breeding of Cory cat fish	06 Dec, 2014	ETV Bangla Annadata Programme
9	Dr. Mahapatra	Food of Aquarium Fish	28 Dec, 2014	ETV Bangla Annadata Programme
10	Dr. Mahapatra	Breeding of Anabas Programme	03 Jan, 2015	ETV Bangla Annadata
11	Dr. J. Krishna Prasad	*Marpuchapi pillauuto pathi*	09 Feb, 2015	All India Radio Visakhapatnam
12	Dr. R.K. Upadhyay	Fish Culture and integrated fish farming Under Gram Mangal program	23 Feb, 2015	Bhopal Doordarshan, Bhopal
13	Mr. R. Ravisankar	*Manchineeti Chepapillalau to pathi*	27 Feb, 2015	All India Radio Visakhapatnam

6.9. Field Training (FET) programme

Name of the Programme	Sponsoring organisation	Duration of Programme	No. of participants
Field Experience Training (FET) for Scientist-Trainee of 101st FOCAARS	NAARM Hyderabad	19 Feb- 11 Mar, 15	6
Inter State Field Study Tour Programme of 17th batch In-service trainees of Tripura Fisheries Training Institute	Tripura Fisheries Training Institute	15 Mar 2015 and 22-27 Mar, 2015	24

6.10. Exposure visits

S.No.	Visitors	Sponsored by	Date	No.
1	Fish farmers from Department of Fisheries, Manipur	NFDB Hyderabad	(26–27 May, 14)	20
2.	Progressive Fish farmers from Tripura	Department of Fisheries, Tripura	05-10 Jun, 2014	25
3.	Progressive Fish farmers from Shasya Shyamala Krishi Vigyan Kendra, Ramakrishna Mission Vivekananda University	NFDB, Hyderabad	29 Jun- 4 Jul, 2014	25
4.	Progressive Fish farmers from Manipur	NFDB, Hyderabad	21-22 Jul, 2014	16
5.	Officers of State Fisheries Dept., Govt. of Bihar	IIT Kharagpur Directorate of Fisheries, Bihar	09 Jul, 2014	35
6.	Progressive fish farmers from Manipur	NFDB, Hyderabad	25 -26 Aug, 2014	20
7.	SHG members from Ramkarchar Gram Panchayat Sunderbans, W.B.	Nature Environment & Wildlife Society, Kolkata	01 Sep, 2014	45
8.	Programme of progressive fish farmers from Andaman & Nicobar Island	Fisheries Training Centre, Department of Fisheries, Andaman & Nicobar Island	01 Dec, 2014	15
9.	Farmers from Araria District, Bihar	ATMA	06–09 Jan, 2015	20
10.	Fish farmers from Sitamari District of Bihar	ATMA	02-04 Feb, 2015	20

6.11. Fish/Prawn Seed Production, Sale and Revenue Generated

Revenue generated

Aquaculture, CIFE Headquarters, Mumbai

- Rs 10,000/- were collected as analytical charges from soil and water quality lab
- Rs. 19,805/- as revenue from sale of ornamental fishes from Ornamental Fish Hatchery Unit .

Vessel

- An amount of Rs. 40,000/- was generated from different agencies as hiring charges of Narmada.

Rohtak

- An impressive amount of Rs. 40,91,630 (Rupees Forty Lakh ninety one thousand six hundred and thirty only) was realized as revenue on account of receipts from sale of shrimp and misc receipts during 2014-15.

Kakinada

- Revenue amounting to Rs. 10,96,345 was generated from training, sales and farm produce, etc.

Powarkheda

- A total amount of Rs. 5,69,870 was generated from seed (fry/fingerlings) sale

Chapter 7

Honours and Awards

7.1. Honours and awards/Appreciations/ Important Fellowships and ICAR sports

Innovative Award

Dr. W.S. Lakra won the Innovative Award for Shrimp Farming using Inland Saline Areas from the Punjab State Council for Science & Technology, Govt. of Punjab, 2014 as team leader.

Bharat Ratna Dr. C. Subramaniam award for Best Teacher

Dr. G. Venkateshwarlu, Principal Scientist was honoured with the Bharat Ratna Dr. C. Subramaniam award for outstanding teachers -2013. He contributed as a teacher, research guide and academic administrator towards quality education.

Achievement Awards

Dr. N.P. Sahu, Principal Scientist and Head received the "Achievement Award" from Honorable Chief Minister of Kerala, Sri Oomman Chandy on 18 Sep, 2014 in recognition of meritorious services rendered in the field of Aquaculture Nutrition Research during 56th National Symposium conducted by CLFMA of India at Cochin.

Dr. Gopalkrishna, Principal Scientist and Head received Professor Har Swaroop God Medal for Outstanding contribution in Genetics and Biotechnology from Zoological Society of India, Haridwar in December 2014.

International recognition

Dr. Megha Bedekar, Senoir Scientist received certificate of recognition at International Conference on Vaccine and Vaccinations held at Valencia Spain, for research work entitled "Role of interferon gamma as adjuvant in fish vaccine"

FELLOWSHIPS

Dr. K. Paniprasad, Principal Scientist was honoured with Fellow of National Academy of Biological Sciences from National Academy of Biological Sciences, Tamil Nadu on 20 July 2014 for the contribution to fisheries and aquaculture.

Dr. Gopalkrishna, Principal Scientist and Head received Fellowship award of National Academy of Veterinary Sciences from National Academy of Veterinary Sciences at New Delhi January for outstanding contribution in genetics.

Dr. Chaturvedi, Senior Scientist was honoured with Fellowship from Society of Agriculture & Biological Research, Lucknow U.P.

Felicitation from NAAS

Mr. Dasari Bhoomaiah, Assistant Chief Technical Officer, was felicitated by NAAS, New Delhi on 3 February 2015 for the concept and creation of XII Agricultural Science Congress logo.

Winning entry in www.mygov.nic.in

Mr. Dasari Bhoomaiah, Assistant Chief Technical Officer, won an award of Rs.10,000 and Certificate of Merit for his creative design for E-Greetings on the MyGov Portal, an interactive website launched by Prime Minister Narendra Modi to encourage citizens to contribute to governance.

APPRECIATIONS

Rohtak Centre received an appreciation letter from Dr. S. Ayyapan, Secretary, DARE, Government of India & DG, ICAR, New Delhi for the first successful demonstration of *Litopenaeus vannamei* in the farmers' fields in Haryana.

Powarkheda Centre received III prize for Best Stall for exhibition arranged under 'Krishimela' organized by the Dept. of Agriculture, Hoshangabad during15-17th October, 2014

Mr. Dasari Bhoomaiah received certificate of appreciation for designing the logo of 10th Indian Fisheries and Aquaculture Forum organised by AFSIB, Mangalore in collaboration with NBFGR, Lucknow during 12-15 November 2015.

7.2. Institutional Awards 2013-14

S.No	Category	Awardee
1.	Best Scientist	Dr. A. K. Verma
2.	Best Young Faculty	Dr. A. Pavan Kumar and Dr. A. K. Balange
3.	Best Teacher	Dr. N. K. Chadda
4.	Best Extension Scientist/Worker	Dr. J. Krishna Prasad
5.	Best Division / Centre	CIFE Kakinada Centre
6.	Best Technical Staff	Mr. Dasari Bhoomaiah Dr. M. K. Chouksey
7.	Best Administrative Staff	Mr. Suresh H. Bhosale
8.	Award for Institutional Building	Mr. Chandrakant M H
9.	Award for Hindi Publication	Dr. Chandra Prakash
10.	Award for Patent / IPR / Technology Generation / Commercialization	Dr. G. Venkateshwarlu
11.	Award for Best Publication of the year (Highest Impact Factor)	Dr. Rakhi Kumari, Dr. Subodh Gupta, Dr. Arvind R Singh, Dr. S. Ferosekhan, Dr. D. C. Kothari, Dr. Asim Kumar Pal and Dr. B. Jadhao
12.	Award for overall Best M.F.Sc. Dissertation	Ms. Niti Sharma
13.	Award for overall Best Ph.D. Thesis	Dr. A. Khathirvel Pandian
14.	School Children — Highest Scorer in Class X (for children of employees of CIFE)	Master Aayush Grover S/o Mrs. Anu Grover
15.	School Children — Highest scorer in Class XII (for children of employees of CIFE)	Master Shrey Grover S/o Mrs. Anu Grover

7.3. ICAR Sports

CIFE won following prizes in ICAR zonal and final meet under the guidance of Chief de-Mission Mr. Alkesh Dwivedi.

1. ICAR Zonal Sports (West Zone) during 21-24 November 2014 at Jodhpur

- **Fair Play Trophy** - **CIFE, Mumbai Sports contingent**

Men:

- **Kabaddi Champion** - **Gold**
  Team: Mr. Bhaskar Mandhare, Mr. Ravindra Kadam, Mr. Mahesh Waghela, Mr. Jagdish Dhanu , Mr. Pradeep Angane, Mr. Vasant Ondkar, Mr. Yogesh Jadhav, Mr. Dhanpat Singh, Mr. J. M. Koli and Mr. Raghuveer Prasad
- **Badminton** - **Gold**
  Team: Dr. Gaurav Rathod, Dr. Balange, Dr. A.K.Verma, Dr. Muralidhar and Dr. Kundan Kumar
- **Carrom** - **Champion - Gold** (Mr. Rohit Satyanarayana)
- **400 m Race** - **Silver** (Mr. Kunal Mann)
- **800 m Race** – **Silver** (Mr. Kunal Mann)
- **1500 m Race** – **Silver** (Mr. Kunal Mann)
- **Relay (100x4)** – **Silver**
  Team: Mr. Deepak Bhokase, Mr. Kishore Bose, Mr. Ninad Kandalgaonkar and Mr. Sambhaji Shelke

Women

- **TT Single** – **Silver** (Ms. Chandrarekha Khundol)
- **TT Double** – **Silver**
  Team: Ms. Chandrarekha Khundol, Mrs. Francesca Fernandes
- **Badminton Single** – **Silver (**Mrs. Vandana Tambe)
- **Badminton Double** – **Silver**
  Team: Ms. Chandrarekha Khundol, Mrs. Vandana Tambe

2. ICAR Final Sports during 11-14 March 2015 at Karnal

- **Fair Play Trophy** - CIFE, Mumbai
- **800 m race – Gold** (Mr. Kunal Mann)
- **1500 m race – Gold** (Mr. Kunal Mann)

Chapter 8

Linkages and Collaboration

8.1. Linkages

The Institute maintains linkages and collaborations with various national and international institutions and agencies for educational, research and development.

Government of India Organizations

- Fishery Survey of India, Mumbai
- Central Institute of Fisheries Nautical and Engineering Training, Kochi
- Marine Products Export Development Authority, Kochi
- National Institute of Nutrition, Hyderabad
- Zoological Survey of India
- Indian Institute of Technology, Kharagpur
- Department of Earth Sciences, Government of India
- Department of Science and Technology, Government of India
- Department of Biotechnology, Government of India
- Indian National Center for Ocean Information Services, Hyderabad
- Satellite Application Centre, Ahmedabad in the utilization of OCEANSAT II
- Bhaba Atomic Research Centre, Mumbai
- Tata Cancer Research Center, Mumbai
- Indian Institute of Foreign Trade, Kolkata
- Tata institute of Fundamental Research, Mumbai
- Krishi Vigyan Kendra,Banswara, Rajasthan
- Nuclear Power Corporation of India Limited, Mumbai
- National Bank for Agriculture and Rural Development, Maharashtra

ICAR Institutes

- Central Marine Fisheries Research Institute, Kochi
- Central Institute of Brachishwater Aquaculture, Chennai
- Central Institute of Freshwater Aquaculture, Bhubaneshwar
- Central Inland Fisheries Research Institute, Barrackpore
- Central Institute of Fisheries Technology, Kochi
- National Bureau of Fish Gentic Resources, Lucknow
- Directorate of Coldwater Fisheries Research, Bhimtal
- ICAR Research Complex for Goa, Goa
- ICAR Research Complex for Eastern Region, Patna
- ICAR Research Complex for North Eastern Hill Region, Barapani
- IARI, New Delhi
- Central Institute of Agricultural Engineering, Bhopal

CSIR Institutes

- Industrial Toxicology Research Centre, Lucknow
- Central Drug Research Institute, Lucknow
- Central Institute of Medicinal and Aromatic Plants, Lucknow
- Central Food Technological Research Institute, Mysore
- National Institute of Oceanography, Goa
- Centre for Cellular and Molecular Biology, Hyderabad
- National Botanical Research Institue, Lucknow
- Institute of Genomics and Integrative Biology, Delhi
- Indian Institute of Integrative Medicine, Jammu
- Indian Institute of Chemical Biology, Kolkata

Universities

- Cochin University of Science and Technology, Kochi
- Annamalai University, Chidambaram
- Adikavi Nannaya University, Rajahmundry
- University of Goa, Goa
- Acharya N.G. Ranga University, Guntur
- B.S. Konkan Krishi Vidyapeeth, Dapoli
- Maharana Pratap University of Agriculture and Technology, Udaipur
- Jawaharlal Nehru University, New Delhi
- Mangalore University, Mangalore
- Bhartiyar University, Coimbatore
- West Bengal University of Animal & Fishery Sciences, Kolkata
- Mumbai University, Mumbai
- Bidhan Chardra Krishi Viswa Vidyalaya, Nadia, West Bengal
- Kalyani University, Kalyani West Bengal
- Barkhatullah University, Bhopal
- Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur
- Chhattisgarh Kamdhenu Vishwavidyalya
- Babasaheb Bhimrao Ambedkar University, Lucknow
- Centre of Agriculture University, Imphal

Other Organizations

- Haryana Kishan Ayog, Punjab
- State Institute of Fisheries Technology, Kakinada
- Tata Power Company, Lonavala & Mumbai
- Action Aid International, Port Blair
- M. S. Swaminathan Research Foundation, Chennai
- The Seafood Exporters Association of India, Kolkata
- Nezami Rekha Sea Foods Pvt. Ltd., Kolkata
- IFB Agro Industries Ltd., Aquatic & Marine Products Div., Kolkata
- Shimpo Exports, Kolkata
- Coreline Exports, Kolkata
- Digha Sea Food Exports, Kolkata
- NSZA Sea Food Pvt. Ltd, Kolkata
- Central Calcutta Science and Culture Organization for Youth
- APC Nutrient, Mumbai
- Godrej Agrovet Pvt. Ltd., Vijayawada
- Maharashtra Machimar Kriti Samiti, Mumbai
- Akhil Bhartiya Machimar Sanghatna, Mumbai
- Madhya Pradesh Fish Federation
- CPWD, Bhopal
- CPWD, Hoshanagabad
- Telecom Department, M.P.
- State Electricity Board, M.P.
- Saguna Baugh farm, Neral
- Tata Power co. Mahseer farm, Lonavla
- Govt. Fish Farm, Khopoli
- Arrey Fish Farm, Goregaon
- *Shramajivi Janata Sahayyak Mandal,* Mahad, Raigard, Maharashtra

State Governments

Department of Fisheries of the following states:

Haryana
Uttar Pradesh
Bihar
Tamil Nadu
Andhra Pradesh
Tripura
Arunachal Pradesh
Madhya Pradesh
Meghalaya
Nagaland
Assam
Manipur
Mizoram
Sikkim
Punjab

NGOs:

- Interactive Research School in Health Affairs, Pune
- Shashwat, Manchar, District Pune
- Yusuf Meherally Centre, Kutch, Gujarat
- United Artists' Association, Ganjam, Orissa
- Friends of Nature Association, Talegaon , Maharastra

International

- University of Idaho, Moscow, Idaho, USA
- University of Kentucky, Lexington, KY, USA
- Curtin University, Australia

8.2. Collaboration

CIFE and CAU Signed MoU for Collaboration

Central Institute of Fisheries Education (CIFE), Mumbai and Central Agricultural University (CAU), Imphal signed a MoU (Memorandum of Understanding) on 14th June, 2014 to facilitate collaboration in academic, research and training programmes.

Dr. W.S Lakra, Director, CIFE and Dr. S.N. Puri, Vice-Chancellor, CAU exchanging MoU agreements on 14 June, 2014.

Chapter 9

Publications

9.1. International Journals

Agnes A.D.S., Immanuel S., Ananthan P.S., Ajay Anand G. and Krishnan M., 2015. Fisheries management in Stanley Reservoir- A Case Study. *Fishery Technology*. [NAAS : 4.87].

Andersen J.L., He G., Kakarla P., Ranjana K.C., Kumar S., Lakra W.S., Mukherjee M.M., Ranaweera I., Shrestha U., Tran T. and Varela M.F., 2015. Multidrug efflux pumps from Enterobacteriaceae, *Vibrio cholerae* and *Staphylococcus aureus* Bacterial Food Pathogens. *International Journal of Environment Research and Public Health,* 12:1487-1547. [NAAS : 8.0] [Impact No. 2.0].

Andersen J.L., He G., Kakarla P., Ranjana KC, Kumar S., Lakra W.S., Mukherjee M., Ranaweera I., Ugina S., Tran T. and Varela M.F., 2015. Multidrug Efflux Pumps from Enterobacteriaceae, *Vibrio cholerae* and *Staphylococcus aureus* Bacterial Food Pathogens. *International Journal of Environmental Research and Public Health, 12:* 1487-1547. [NAAS : 7.99]

Antony J., Saharan N., Hari Krishna, Reddy A.K. and Lakra W.S., 2015. Effect of salinity and Na+/H+ ratio on osmoregulation and growth performance of *Penaeus monodon* juvenile reared in inland saline water. *Journal of World Aquaculture Society*, 46: 171–182. [NAAS : 6.93] [Impact No. 0.922]

Antony J., Vungurala H., Saharan N., Reddy A.K., Chadha N.K. and Lakra W.S., 2015. Effects of salinity and na+/k+ ratio on osmoregulation and growth performance of black tiger prawn (*Penaeus monodon* Fabricius, 1798) juveniles reared in inland saline water. *Journal of the World Aquaculture Society*, 46(2): 171- 182. [NAAS : 6.93] [Impact No. 0.922]

Bamaniya D.C., Pavan Kumar A., Gireesh Babu P., Sharma N., Reang D., Gopal Krishna and Lakra W.S., 2015. DNA barcoding of marine ornamental fishes from India. *Mitochondrial DNA*. DOI:10.3109/19401736.2014.1003923. [NAAS : 7.70] [Impact No. 1.70]

Bamaniya D.C., Pavan Kumar A., Gireesh Babu P., Sharma N., Reang D., Gopal Krishna and Lakra W.S., 2014. DNA barcoding of marine ornamental fishes from India. *Mitochondrial DNA* Informa UK Ltd. DOI: 10.3109/19401736.2014.1003923. [NAAS : 7.7]

Bedekar M.K., Soman P.K., Rajendran K.V., Tripathi G. and Makesh M., 2015. Molecular characterization of lyceraldehyde-3-phosphate dehydrogenase (gapdh) gene of field isolate of *Edwardsiella tarda.Advances in Bioscience and Biotechnology*, 6: 89-95. [Impact No. 0.81]

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Chapter 10

Participation

10.1. Participation in Conferences Abroad

Event and Organized by	Funded by	Venue	Period	Name
4th International Conference on Vaccine and vaccination (OMICS group)	DBT and INSA	Spain, Valencia	24-26 Sept, 2014	Megha Bedekar
International Conference on Fisheries and Aquaculture - ICFA 2014 (University of Ruhuna, Sri Lanka and The International Institute of Knowledge Management, Sri Lanka)	ICFA and INSA, New Delhi	Colombo, Srilanka	9-10 Sept, 2014	K. Pani Prasad
Global Conference on Inland Fisheries (Food and Agriculture Organization and Michigan State University Rome, Italy)	FAO, Rome	Rome, Italy	26-28 Jan 2015	P.S. Ananthan

10.2. Participation in Workshop/Conferences/Symposia/ meetings /Farmers' meet etc. in India

Name of the Programme	Venue and Organized by	Date	Attended by
Establishment of modern mobile fish marketing van and cage culture in reservoirs for the tribal groups	Tribal Welfare Department State Govt., Maharashtra	10 Apr, 2014	Kiran Dube
HRD intervention	NFDB, Hyderabad	20 Apr, 2014	J. Krishna Prasad
Intervention Workshop	NFDB Hyderabad	25 Apr, 2014	B. K. Mahapatra
AGRESCO 2014	Konkan Krishi Vidyapeeth, Dapoli, Maharashtra	11-13 May, 2014	Babita Rani
42th *Sanyukt Krishi Sanshodhan ani Vikas Samitee Baithak*, 2014	Konkan Krishi Vidyapeeth, Dapoli, Maharashtra	12-14 May, 2014	Asha Landge
Annual Hindi Meeting	Security Paper Mill, Hoshangabad	16 May, 2014	Somdutt and R. K. Upadhyay
Aquaculture	Tamil Nadu Fisheries University Chennai	16-17 May, 2014	Damotharan
Special Meeting of Senior Officers	Dept. of Fisheries, Govt. of Madhya Pradesh, Bhopal	19 May, 2014	Somdutt and Senior officers
Interactive Workshop for Preparation of training module for the development of ornamental fisheries in the state of W.B.	CIFE Kolkata Centre	23 May, 2014	All Scientists
Workshop on Research prioritization and reconciliation in Eastern India	ICAR Complex, Patna	28 May, 2014	B. K. Mahapatra
Scientist Advisory Committee	KVK, ZARSVV, Powarkheda	29 May, 2014	Somdutt
Regional Committee Meeting	ICAR research complex, Barapani	2 Jun, 2014	B. K. Mahapatra
National Conference-Geomatrix 14	Centre of Studies in Resources Engineering (CSRE), IIT Bombay	4-6 Jun, 2014	Vidya Shree Bharti

Workshop on Impact of capacity building programs under NAIP	NASC Complex, New Delhi NAIP	6 Jun, 2014	Aparna Chaudhuri
International Meet on Sustainable shrimp farming-way forward	Tamil Nadu Fisheries University, Chennai	13-14 Jun, 2014	Gayatri Tripathi
Effect of climate change on fish and fsheries	S.N. College, Alleppey, Kerala,	26-27 Jun, 2014	Shashi Bhushan
XXII ICAR Regional committee II meeting of the regional committee	CIFRI, Barrackpore ICAR, New Delhi	27-28 Jun, 2014	Suresh Babu P.P B. K. Mahapatra
National Fish Farmers' Day	ICAR-CIFE, Mumbai	10 Jul, 2014	All staff
Training-cum-Workshop on Aquaculture and fisheries management for food and nutritional securities in Arunachal Pradesh	Itanagar, Arunachal Pradesh	10-11 Jun, 2014	Scientist
Training-cum-Workshop on Aquaculture and Fisheries Management for Food and Nutritional Securities in Mizoram	Mizoram	19 Jun, 2014	Scientist
As a Member of the Scientific Advisory Committee (SAC) of the 'Sasya Shyamala' Krishi Vigyan Kendra, RKMVU	KVK, Narendrapur	6 Jul, 2014	B. K. Mahapatra
Fish Farmers Day	Vill- Jayatala, Baruipur Sasya Shyamala' Krishi Vigyan Kendra, RKMVU	10 Jul, 2014	B. K. Mahapatra
Brainstorming Session on Challenges before NARS in National Food Production	ICAR-CIFE, Mumbai Indian Agricultural Universities Association	11-12 Jul, 2014	All faculty
International Conference on Host Pathogen Interactions	Hyderabad Department of Biotechnology	12-15 Jul, 2014	Megha Bedekar
Meeting with Director of Fisheries, Govt of West Bengal	Directorate of Fisheries, West Bengal	15 Jul, 2014	B. K. Mahapatra S. Munilkumar and G. H. Pailan
The Meeting with Director of Fisheries, Mizoram	CIFE, Kolkata Centre	18 Jul, 2014	B. K. Mahapatra G. H. Pailan and S. Munilkumar
National Seminar on Biodiversity Conservation: status, future and way forward	K.S. Rangasamy College of Technology, Thiruchengode, National Academy of Biological Sciences, Tamil Nadu	20-21 Jul, 2014	K. Pani Prasad
International Conference on natural fibre	Indian Natural Fibre Society	1 Aug, 2014	B. K. Mahapatra
44th Annual General Body Meeting of IFSI	CIFRI, Barrackpore	4 Aug, 2014	B. K. Mahapatra
Meeting of The Executive Committee of the Zoological Society, Kolkata	Zoological Society, Kolkata	19 Aug, 2014	B. K. Mahapatra
ZPD Zone-II Technology documentation meeting	ZPD, Kolkata	22 Aug, 2014	B. K. Mahapatra
One day workshop on Database & social security of fishers" FISHCOPFED	CIFE, Kolkata	28 Aug, 2014	All scientists

The meeting to prepare the draft perspective plan and finalization of immediate and long term action plans for fisheries	CIFRI, Barrackpore	30 Aug, 2014	B. K. Mahapatra
Water quality and its management	NIH, Roorkee	1-5, Sep, 2014	Ashok Kumar
Brain storming workshop on and intervention in brackishwater aquaculture	SIFT, Kakinada CIBA Kakinada	5 Sep, 2014	Scientist technology Technical officers of Kakinada Centre
18th National Exhibition	Amarabati Maidan, Kolkata	6 Sep, 2014	All Scientist
Preparation of biodiversity conservation plan on Jaitapur nuclear power plant	NPCIL, Mumbai	9 Sep, 2014	S. Dasgupta
International Conference on Fisheries and Aquaculture - ICFA 2014	University of Ruhuna, Colombo The International Institute of Knowledge Management, Sri Lanka	9-10 Sep, 2014	K. Pani Prasad
One day Sensitization Programme on IPR related matters	ZPD, Kolkata	12 Sep, 2014	B. K. Mahapatra
2nd International conference on Animal and Dairy Sciences	Hyderabad OMICS Group	15-17 Sep, 2014	Dr Sanath Kumar
II nd Coordination committee meeting for NFBSFARA sponsored projects	SMD, ICAR, New Delhi	18 Sep, 2014	S. Dasgupta
Brainstorming session on reservoir fisheries development in India: management and policy option	NASC Complex, New Delhi	19 Sep, 2014	Kiran Dube
1st meeting of the Scientific Advisory Committee (SAC) of the 'Sasya Shyamala' Krishi Vigyan Kendra	Ramakrishna Mission Vivekananda University, Narendrapur	19 Sep, 2014	B. K. Mahapatra
Discussion with Director of Fisheries, Bihar for Collaborative and HRD Programme	Patna	23 Sep, 2014	B. K. Mahapatra
International Workshop on Culture of Responsibility, Biosafety Cabinets and Waste Management	Bombay Veterinary College American Society for Microbiology	23 -24 Sep, 2014	Rathi
Development of fisheries in and around Dist. Hoshangabad	Collectorate office Dist. Hoshangabad	08 Oct, 2014	Sunil Kumar Nayak R. K. Upadhyay
XXIII Meeting of ICAR Regional Committee No. VII Raipur, Chhattisgarh	Indira Gandhi Krishi Vishwavidyalaya, Raipur ICAR, Delhi	17-18 Oct, 2014	Kiran Dube
NAAS Silver Jubilee National Symposium on Indian Fisheries and Aquaculture: 25 Years of Achievement and Way Forward	ICAR-CIFE	21-22 Oct, 2014	All faculty
SAC Meeting	KVK, Nimpith	28 Oct, 2014	B. K. Mahapatra
MPEDA Committee Meeting	MPEDA, Kolkata	29 Oct, 2014	B. K. Mahapatra
Indo-Norwegian cooperation -Joint Workshop on Aquaculture	Mumbai	30 Oct, 2014	Kiran Dube
XIIth Convocation	ICAR-CIFE, Mumbai	7 Nov, 2014	All staff
10th Indian fisheries and aquaculture forum	ICAR-NBFGR, Lucknow Asian Fisheries Society Indian Branch and NBFGR, Lucknow	12-14 Nov, 2014	Aparna Chaudhuri Pani Prasad Gayatri Tripathi S. Dasgupta, Pavan

Annual review meeting of NFDB funded Surveillance Project	NBFGR, Lucknow	16 Nov, 2014	Gaurav Rathore
22nd Annual Conference of the Agricultural Economics Research Association, New Delhi	University of Agricultural Sciences, Raichur	18-20 Nov, 2014	Krishnan Nalini Ranjan
Panel Discussion on Soil Science Education and Society, 79th Annual Convention of the Society of Soil Science	PJTSAU, Hyderabad	24 – 27 Nov. 2014	Neelam Saharan
International Symbosia on Marine Ecosystems Challenges and Opportunities 2014	CMFRI, Kochi Marine Biological Association of India, CMFRI Kochi	2-5 Dec, 2014	Vidya Shree Bharti
6th Annual meeting of Proteomic Society of India Proteomic from discovery to function international conference	IIT, Mumbai	6-9 Dec, 2014	Megha Bedekar
Workshop on "fish collection and transportation scheme in Sunderbans	CIFE, Kolkata	12 Dec, 2014	All scientists
Golden Jubilee Celebration Day of NDRI	NDRI, ERS, Kalyani	13 Dec, 2014	G. H. Pailan
Discussion on Collaborative Research programs	Director, IISS, Bhopal	15 Dec, 2014	Somdutt, Chandra Prakash and other officials
Special advisory committee meeting on Hilsa conservation	CIFE, Kolkata Directorate of Fisheries, Govt. of WB	17 Dec, 20014	B.K. Mahapatra, G. H. Pailan
International Conference on Emerging Challenges in Biotechnology Human Health and Environment	Holkar University, Indore, M.P.	18-20 Dec, 2014	Megha Bedekar
Nagar Rajbhasha Karyanvayan sammiti meeting	Security Paper Mill (SPM), Hoshangabad	19 Dec, 2014	Somdutt and R. K. Upadhyay
National Seminar on Protecting Coastal Biodiversity: Mitigating threats to the Sundarbans Ecosystem	Techno India University, Kolkata	26 -27 Dec, 2014	B. K. Mahapatra
Marine Biodiversity	CIFE Centre, Kolkata ICAR-CIFE, Mumbai	27-28 Dec, 2014	A.K. Jaiswar and Alkesh Dwivedi
102nd Indian Science Congress	Mumbai University	3-7 Jan, 2015	W.S. Lakra, Nayak B. B. Vidya Shree Bharati, Damotharan, Rathi, Saurav Kumar, Sikander, Shashi Bhushan, Samna and Jeena
Business meeting on bengal global business summit	Salt Lake, Kolkata	7-8 Jan, 2015	B. K. Mahapatra
Initiation Meeting-cum-Workshop on "Outreach Activity on Fish Genetic Stocks"(Phase II)	ICAR-NBFGR, Lucknow	8 Jan, 2015	A. Pavan Kumar
Livestock Expo, 2015	Shri Mukatsar Sahib, Punjab	8-12, Jan, 2015	V. Harikrishna Arun Sudhagar . S
Panel Discussion on Latest Interventions in Aquaculture, Llivestock Expo- 2015	Muktasar, Punjab	10 -13 Jan, 2015	Neelam Saharan

LIVESTOCK EXPO, 2015 on Prospects of Shrimp Farming in Salt Affected Soils in Punjab	Department of Fisheries, Punjab	11 Jan, 2015	Harikrishna
II nd Dr. Sushil Kumar Mukherjee and Dr. Krishna Kamini Rohatgi-Mukherjee Annual Endowment Lecture	ICAR-CRIJAF Nilgunj, Kolkata	17 Jan, 2014	B. K. Mahapatra
International Workshop Fish Genomics	CIFE, Mumbai	19-21 Jan, 2015	All faculty
4th National Mission Meeting on Conservation of Sharks-India (NMCSI-4)	ICAR-CIFE, Mumbai and Association of Deep Sea going Artisanal Fishermen, Thoothoor	22 Jan, 2015	All faculty
9th Convocation of West Bengal University of Animal and Fishery Sciences	Nadia, West Bengal	29 Jan, 2014	B. K. Mahapatra
Workshop of Fisheries Chapter of Indian Nitrogen Group	CIFRI, Barrackpore	30 Jan, 2015	S. Datta
Joint Regional Rajbhasha Conference	Bharat Heavy Electricals Limited (BHEL), Bhopal and *Kshetriy Karyanvan Sammitee*, Bhopal	30 Jan, 2015	R. K. Upadhyay
Meeting of Hilsa project	CIFRI, Barrackpore	02 Feb, 2015	G. H. Pailan
DAE-BRNS Life Sciences Symposium (LSS-2015) on Advances in Microbiology of Food, agriculture, Health and Environment	Nabhikiya Urja Bhavan (NUB) Auditorium, BRNS Anushaktinagar	03 Feb, 2015	B B Nayak
XII Agricultural Science Congress	NDRI, Karnal	03-06, Feb, 2015	W.S. Lakra, Harikrishna Dasari Bhoomaiah
Seminar on Farmers' friendly agro technologies for socio-economic development of farmers at Ghola	Ghola, Baruipur, South 24 Parganas	10 Feb, 2015	B. K. Mahapatra
Entrepreneurship development program for NEH region	AAU, Jorhat CIFE, Mumbai	10-14 Feb, 2015	Kiran Dube and Other Officials
National Conference on Recent Advances in Animal Sciences	Dept. of Applied Mangalore University, Mangalore	13-15 Feb, 2015	Paromita Banerjee
National Seminar on Aquresources: care and concerns	Jadavpur University, Kolkata Social Environmental and Biological Association (SEBA) in Collaboration with ENVIS Centre on Faunal Diversity, Zoological Survey of India and West Bengal Biodiversity Board	14 Feb, 2015	B. K. Mahapatra
Seminar on Conservation of Water bodies in Sundarban areas for life and livelihood	Nimpith, South 24 Parganas	20 Feb, 2015	B. K. Mahapatra
Aqua Aquaria	MPEDA and State Fisheries Department of Kakinada Centre	20-22 Feb, 2015	Scientist and Technical Officers
Brainstroming session on Prospects of Seaweed Cultivation and Utilization in India	CIFE, Mumbai	21 Feb, 2015	All faculty
PME Workshop	NAAS, New Delhi	22-23 Feb, 2015	Neelam Saharan

Biofloc technology in aquaculture for better productivity and sustainability	Hotel Royal Park, Kakinada NACSA.	23-24 Feb, 2015	Scientist and Technical officers
Workshop on Training needs assessment for HRD Nodal Officers of ICAR	NAARM, Hyderabad	26 Feb, 2015	Gaurav Rathore
Prof. H. K. Mookerjee Memorial Lecture on Inland open water fisheries: towards responsible future	Zoological Society, Kolkata	27 Feb, 2015	B. K. Mahapatra
CIFE-Industry meet	ICAR-CIFE, Mumbai	28 Feb, 2015	All faculty
Meeting with Commissioner of Fisheries	SIFT, Kakinada	Mar, 2015	Suresh Babu P.P Arun Sharma and T.I.Chanu
Coastal Erosion Environmental Challenges	Jawaharlal Nehru Technological University, (JNTUK), Kakinada	6-7 Mar, 2015	V.N. Acharyulu
National Consultative Meeting on Management of Ring seine fishing for conservation of resources and reduction of carbon footprint	CIFT, Kochi	13 Mar, 2015	Latha Shenoy
Agri Leadership Summit – 2015	Leisure Valley, Gurgaon	13- 15, Mar, 2015	W. S. Lakra A. K. Reddy V. Harikrishna Arun Sudhagar Ashok Kumar and Satyender Singh
Nagar Rajbhasha Karyanvayan Sammiti Special group meeting	Security Paper Mill (SPM), Hoshangabad	17 Mar, 2015	Somdutt
II Meeting of Fisheries Chapter of Indian Nitrogen Group	CIFRI, Barrackpore	18 Mar, 2015	S. Datta
Seminar on Impact of pellet feed/aerators in the growth and economics of Fish culture	ARTI, Hissar, Haryana Department of Fisheries, Haryana	20 Mar, 2015	Harikrishna Arun Sudhagar
BOS meeting PG department of Zoology, Midnapore	Vidyasagar University, West Bengal	21 Mar, 2015	B. K. Mahapatra
Seminar on effect of stocking density in growth of culturable fishes	ARTI, Hissar, Department of Fisheries, Haryana	22 Mar, 2015	Arun Sudhagar Harikrishna
Seminar on role of post harvest technology and marketing linkage in fish farming in Haryana	Department of Fisheries, Haryana	24 Mar, 2015	Harikrishna Arun Sudhagar
Seminar on scope of ornamental fishes as economically important venture	Karnal, Haryana Department of Fisheries, Haryana	25 Mar, 2015	Harikrishna Arun Sudhagar
Expert consultation on climate Resilient	Veterinary Council of India	25 Mar, 2015	B. K. Mahapatra
Aquaculture strategies for Indian Sundarban	India Seminar Hall, Belgachia		S. Munilkumar
Sixteenth Meeting of the Consultative Committee of the Fishery Survey of India, Mumbai	Fishery Survey of India, (FSI) Mumbai	30 Mar, 2015	Latha Shenoy

10.3. Training Programmes\Summer schools/Winter schools attended

S. No.	Name of the Programme	Period	Organized by	Attended by
1.	Professional laboratory attachment Training	12 May-11 Aug, 2014	ICAR- CIBA, Chennai	Damotharan
2.	Professional laboratory attachment Training	12 May-11 Aug, 2014	ICAR-Centre for Agricultural Bioinformatics (CABin) IASRI (New Delhi)	Mujaideen
3.	Professional laboratory attachment Training	23 May-24 Jul, 2014	ICAR-National Institute of High Security Animal Diseases (NIHSAD)	Jeena
.4	Professional laboratory attachment on aquatic animal health	12 May-11 Aug, 2014	CIBA, Chennai	Arun Sudhagar S.
5.	Professional laboratory attachment Training	15 May-14 Aug, 2014	ICAR-NIVEDI, Bengaluru, India	Saurabh
6.	Professional laboratory attachment Training	12 May-11 Aug, 2014	ICAR-NIANP, Bangalore	Sikander
7.	Hands on training on quantitative real tme PCR for diagnosis of Brucellosis	2-4 Jun, 2014	ICAR-NIVEDI, Bengaluru, India	Saurabh
8.	Workshop on national vocational education qualification programme	19-23 Aug, 2014	Agriculture College, Sehore NCERT Department, Bhopal	R. K. Upadhyay
9.	ICAR-CAFT training programme on stock assessment of marine and freshwater fishery resources	02-23 Sep, 2014	ICAR-CIFE, Mumbai	Sikander
10.	Winter school training on recent advances in the development of nutraceuticals, health foods and fish feed from fish and shellfish processing discard	10 Nov-1 Dec, 2014	ICAR-CIFT, Cochin	Sikander
11.	ICAR-CAFT training programme on gender mainstreaming and development	12-23 Dec, 2014	ICAR-CIFE, Mumbai	Martin Xavier and Ramasubramanian V.
12. `	ICAR-CAFT training programme on Utilization of degraded water resources through Pisciculture	28 Jan-17 Feb, 2015	ICAR-CIFE, Mumbai	Arun Sudhagar S., Arun Sharma T.I.Chanu
13.	ICAR-CAFT training programme on molecular, nanotechnological and immunological diagnostics in fisheries and aquaculture	25 Feb-17 Mar, 2015	ICAR-CIFE, Mumbai	Damotharan, Jeena and Saurabh
14.	National training programme on Microbial risk assessment of fresh and processed aquafoods	26 Feb-18 Mar, 2015	TNFU, Tamilnadu Fisheries University	Nagalakshmi
15.	DFAT - PSLP Training workshop on safe water, at ICAR - NBFGR, Lucknow	23 - 27, Mar, 2015	Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, IITR- CSIR and the National Bureau of Fish Genetic Resources (NBFGR- ICAR)	Chandra Prakash

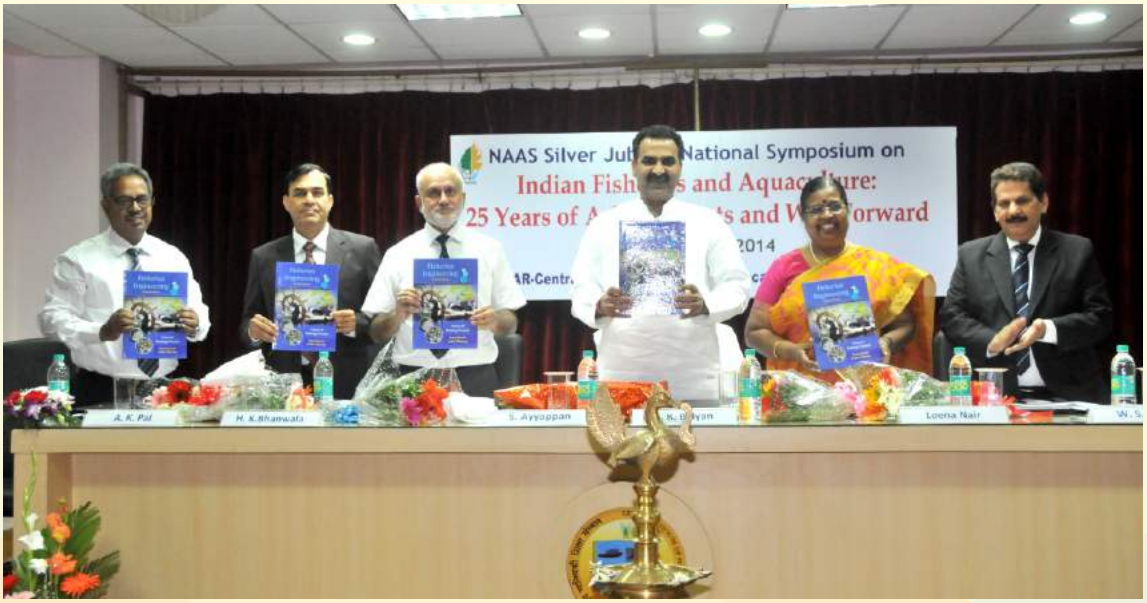
Chapter 11

Organized Meetings, Workshops, Seminars Etc.

11.1. Workshops/ Seminars organised

Event	Funded by	Duration
National Fish Farmers' Day	ICAR-CIFE, Mumbai	10 Jul, 2014
Agricultural University Vice-Chancellors' Meet Brainstorming Session on 'Challenges before NARS in National Food Production'	Indian Association of Agricultural University (IAUA)	11-12 Jul, 2014
NAAS Silver Jubilee National Symposium on Indian Fisheries and Aquaculture: 25 Years of Achievements and Way Forward.	National Academy of Agricultural Sciences (NAAS)	21-22 Oct, 2014
XIIth Convocation	ICAR-CIFE, Mumbai	7 Nov, 2014
International Workshop on Fish Genomics	ICAR-CIFE, Mumbai and United States-India Education Foundation (USIEF)	19-21 Jan, 2015
IV National Mission on Conservation of Sharks - India	ICAR-CIFE, Mumbai to the Association of Deep Sea going Artisanal Fishermen, Tamil Nadu	22 Jan, 2015
Brain storming session on Prospects of Seaweed Cultivation and Utilization in India	ICAR-CIFE, Mumbai	21 Feb, 2015
CIFE-Industry Day	ICAR-CIFE, Mumbai	28 Feb, 2015

National Symposium on 'Indian Fisheries and Aquaculture: 25 Years of Achievements and Way Forward'



A two-day National Symposium on 'Indian Fisheries and Aquaculture: 25 Years of Achievements and Way Forward' organized by NAAS, Western Regional Chapter was inaugurated at Central Institute of Fisheries Education, Mumbai on 21st October, 2014.

Dr. Sanjeev Kumar Balyan, Hon'ble Minister of State for Agriculture & Food Processing Industries, Govt. of India inaugurated the symposium. In the inaugural address he urged the scientists and students of fisheries sector to critically evaluate the strength and weakness of the sector and focus on improving the rural livelihood through better technologies and innovations. He also underscored the importance of the sector in meeting the nutritional security of the country and highlighted the need for a 'Blue Revolution'. Dr. Balyan also suggested that institutions such as NABARD should encourage entrepreneurship and support small farmers through affordable financial assistance.

Dr. S. Ayyappan, Secretary, DARE & Director General, ICAR & President, NAAS, presided over the function. He highlighted the progress and achievements of fisheries and aquaculture sector and emphasized on greater efforts required in the future to sustain growth in this sector. He also underlined some of the challenges such as climate change which have been impacting the sector significantly. He urged the students to be ready for future challenges as they would be steering the sector for the next three decades. **Ms.Leena Nair**, Chairperson, MPEDA and **Dr. Harsh Kumar Bhanwala,** Chairman, NABARD, also attended the meeting as Guests of Honour and expressed their views on the increased potential of fisheries in the country.

Earlier, **Dr. W. S. Lakra**, Director, and Vice-Chancellor, CIFE and the Convenor of the symposium welcomed the dignitaries. Several fisheries experts including Dr. E.G. Silas, Dr. M.V. Gupta, Dr. K. Gopakumar, Dr. K.V. Devaraj, Dr. R. Ramamurthi, Dr. S.D. Tripathi, Directors of various ICAR institutes, Deans of Colleges of Fisheries, representatives from MPEDA, NABARD and Ministry of Agriculture also attended the function as speakers/panelists.

On the occasion, the Hon'ble Minister inaugurated the Ornamental Fish Aquarium and other facility at CIFE. During the function, Dr. E.G. Silas was presented with the Life-time Achievement Award of Indian Fisheries Association.

11.2. Centre for Advanced Faculty Training (CAFT) programmes

Title	Venue	Duration	No. of participants
Stock Assessment of Freshwater and Marine Fishery Resource	ICAR-CIFE, Mumbai	02-23 Sep, 2014	22
Gender Mainstreaming and Development	ICAR-CIFE, Mumbai	12-23 Dec, 2014	15
Utilization of Degraded Water Resources through pisciculture	ICAR-CIFE, Mumbai	28 Jan-17 Feb, 2015	19
Molecular, Nanotechnological and Immunological Diagnostics in Fisheries and Aquaculture	ICAR-CIFE, Mumbai	25 Feb-17 Mar, 2015	12

11.3. Workshops/Trainings for North Eastern Hill (NEH) Region

Event	Place	Date	Funded by
Training-Cum-Workshop on Aquaculture and Fisheries Management for Food and Nutritional Security in Arunachal Pradesh	Itanagar, Arunachal Pradesh	10–11 Jun, 2014	ICAR-CIFE, Mumbai and State Fisheries Department, Government of Arunachal Pradesh
Training-Cum-Workshop on Aquaculture and Fisheries Management for Food and Nutritional Security in Mizoram	Aizwal, Mizoram	19 Jun, 2014	ICAR-CIFE, Mumbai and State Fisheries Dept. of Mizoram
Refresher Course on Fisheries and Aquaculture Development for Officers of the NEH States	ICAR-CIFE, Mumbai	24-29 Nov, 2014	ICAR-CIFE, Mumbai
Awareness-cum-Workshop on Fish Milt Cryopreservation Technology	Mizoram, Aizawl	5-7 Feb, 2015	ICAR-CIFE, Mumbai
Fisheries Entrepreneurship Development on Integrated Farming Systems for Improved and Diversified Livelihood Options for Small and Marginal Farmers of NEH	AAU, Jorhat	10-14 Feb, 2015	ICAR-CIFE, Mumbai, Fisheries Research Centre, AAU, Jorhat and Department of Agri-Business, AAU, Jorhat

11.4. Meetings organized

Institute Research Council meeting	15 April, 2014
Raj Bhasa 'Hindi samiti' meetings at CIFE Centre, Powarkheda	27 June,2014 10 July, 2014 10 September, 2014 05 December, 2014
49th Academic Council meeting	26 July, 2014
Special Academic Council Meeting	6 November, 2014
Nagar Rajbhasha Karvayanan Samiti, Uttar Mumbai (16th half yearly) meeting	25 November, 2014
Seminar Planning Committee meeting for organising National Seminar on Fisheries Extension	11 December, 2014
Extension Council Meeting	12 December, 2014
41st Meeting of Board of Management	24 January, 2015
Parliamentary Committee meeting	29 January, 2015
Research Advisory Council	21 March, 2015

Chapter 12

Distinguished Visitors

Name	Place and designation	Date
Visitors from Abroad		
Prof. Zhanjiang (John) Liu, Aquaculture and Aquatic Sciences, Auburn University, USA	Associate Provost & Associate Vice President for Research, and Professor, School of Fisheries,	16-21, January 2015
Hon'ble Shri Hukmdev Narayan Yadav and other Honourable Members of Parliament	Parliamentary Standing Committee on Agriculture	29 January, 2015
Prof. W. Rajendra, Member, Quinquennial Review T eam (QRT)	Vice-Chancellor Sri Venkateswara University, Tirupati, Andhra Pradesh	4 April 2014
Dr. A.G. Ponnaiah	Former Director, CIBA	November, 2014
Prof. R. Ramamurthi	Former VC, Tirupati	15-17 August, 2014
Dr. R. A. Selvakumar, Member, (QRT)	Ex-ADG (Fy),	15-17 August, 2014
Dr. R. S. Biradar Member, (QRT)	Ex-Joint Director	15-17 August, 2014
Prof. K.C. Dora Member,	(QRT)Professor	15-17 August, 2014
Mr Sanket Bhondve	Collector	22 September, 2014
Mr G. Vajralingam	IAS, Financial Commissioner, Animal Husbandary, Dairy D evelopment & Fisheries, Gov. of Punjab, Chandigarh	27 September, 2014
Dr. S. Ayyappan	Secretary, DARE, Government of India & DG, ICAR, New Delhi	13 November, 2014
Mr Sanjeev Rohilla	AGM, CCD, NABARD, Mumbai	21 July, 2014
Mr Amit Jha	Commissioner, Fisheries, Gov. of Haryana	1 September 2014

Mr G. Vajralingam	IAS, Financial Commissioner, Animal Husbandary, Dairy Development & Fisheries, Gov. of Punjab, Chandigarh	27 September, 2014
Prof . R. Ramamurthi	Chairman, (QRT) INSA Honorary Scientist Former Vice-Chancellor Sri Venkateswara University	30 November- 2 December, 2014
Dr. R. Alfred Selvakumar	Member, (QRT) Former Asst. Dir. General (Fy)	30 November- 2 December 2014
Prof. K..C. Dora,	Member, (QRT) Dean, Faculty of Science, W.B Univ. of Animal and Fishery sciences	30 November- 2 December 2014
Dr. P. Murugesa Bhoopathi	Former Vice-chancellor, Coimbatore University;	21 May, 2014
Dr. Kasi Kanth Math,	Former Director, ICAR `Research Complex, Goa;	21 May, 2014
Shri M. B. Gaikwad	IAS, Commissioner Fisheries, Government of Maharashtra	21 February, 2015
Dr. Sanjeev Kumar Balyan	Hon'ble Minister of State for Agriculture & Food processing Industries, Govt. of India	21 October, 2014.
Dr. S. Ayyappan	Secretary, DARE & Director General, ICAR & President, NAAS	21 October, 2014
Ms. Leena Nair	Chairperson, MPEDA and	21 October, 2014
Dr. Harsh Kumar Bhanwala	Chairman, NABARD	21 October, 2014
Dr. E.G. Silas		21 October, 2014
Dr. M.V. Gupta	World Food Prize Laureate	21 October, 2014
Dr. K. Gopakumar		21 October, 2014
Dr. K.V. Devaraj	Ex-Director, CMFRI, Kochi	21 October, 2014
Dr. R. Ramamurthi		21 October, 2014
Dr. S.D. Tripathi	Ex-Director, CIFE, Mumbai	21 October, 2014
Dr. S. Ayyappan	Secretary, DARE & Director General, ICAR	7 November, 2014
Shri Radha Mohan Singh	Hon'ble Union Minister of Agriculture, Govt. of India	7 November, 2014
Dr.Bharati Lavekar	Hon'ble MLA, Govt. of Maharashtra	7 November, 2014
Dr. K. Palanisamy	Deputy General Manager NABARD, Mumbai	
Mr. Anil Kumar	Deputy Director, MPEDA	10 July, 2014
Dr. A.D. Diwan	Ex-ADG, Marine fisheries	22-23 January, 2015

Dr. R. Shanmughanandam	Proprietor, Galaxy Biolabs & Entrepreneur cum Consultant, Shrimp Farming / Ornamental Fisheries, Tamil Nadu	13 October 2014
Dr. Narayan Gowda	Vice Chancellor (Retired) UAS , Bangalore	13 September, 2014
Dr. Praduman Kumar	Prof. & Head (Retd.), Div. of Agril Economics, IARI, New Delhi	23-27 March, 2015
Dr. R.P. Barman	Emeritus Scientist, ZSI.	10 September, 2014
Dr. E.Vivekanandan	Emeritus Scientist, CMFRI.	15 September, 2014
Dr. M. Srinath	Rtd. HOD, CMFRI.	18 September, 2014
Dr. Sunil Kumar Mohamed	HOD, Molluscan Fisheries, CMFRI.	10 July, 2015
Dr. V.S. Somvanshi	Rtd. D.G.. FSI.	16 September, 2015
Dr. S. Kannan (MPEDA)	Deputy Director, Regional Centre, Vijayawada	
Dr. Raj Kumar (NaCSA)	Chief Executive Officer, NaCSA, Kakinada	
Dr. S. P. Yavalkar	Deputy Director, Directorate of Technical Education Maharashtra State, Mumbai.	4-5 February, 2015
Dr. A. G. Bhole	Ret. Prof., LIT, Nagpur	28 January, 2015
Dr. Shubrankar Mukherjee	CEO and Secretary, Soc. for Appropriate Rural Technology for Sustainability (ARTS)	12 February, 2015
Dr. V. V. Singh	Principal Scientist and OIC, CMFRI, Mumbai Regional Centre.	14 February, 2015
Dr. A.T. Sherikar	Chairman, Accreditation Committee Former VC, MAFSU, Nagpur	19-20 February, 2015
Dr. Paul Raj	Member, Accreditation Committee Former Member Secretary, Coastal Aquaculture Authority, Chennai	19-20 February, 2015
Dr. A.G. Poonaiah	Member, Accreditation Committee Former Director, CIBA, Chennai	19-20 February, 2015
Dr. K.M. Shankar	Member, Accreditation Committee Dean, College of Fisheries, KVAFSU, Kankanady, Mangalore	19-20 February, 2015

Chapter 13

Others

13.1. CIFE, Mumbai organizes an awareness rally on fisheries

Central Institute of Fisheries Education (CIFE), Mumbai organized a rally on 29th November, 2014 as part of the NAAS silver jubilee celebrations. The main objective of this rally was to create general awareness among the public, about fisheries education, research and its importance. The rally was addressed and flagged off by Dr. W. S. Lakra, Director and Vice-Chancellor of CIFE in the presence of Shri Pradeep Tapke, an eminent fishermen and fisher community leader of Versova. A total of 250 people including students and staff members of CIFE participated in the rally. The rally took place from CIFE, new campus to Versova and back. Students and staff carried placards reflecting the importance of fisheries education. Pamphlets containing information about fisheries education, research and its importance were distributed during the rally. The nutritional benefits of eating fish were also explained to the general public.

13.2. Science club

The science club of CIFE, under the supervision of Dr Aparna Chaudhuri continued to organize lectures on varied topics through out the year. The list of lectures organized are given below.

Lectures delivered under science club activity

Name	Lecture	Date
Dr. P. K. Chhonkar	Perception of excellence in science by those who have excelled	9 Jan, 2015
Dr. Nalini Ranjan Kumar	Perspectives on family farming - an instrument of sustainability and social change	31 Dec, 2014
Dr. Megha Bedekar	Role of interferon gamma as immune adjuvant in *Labeo rohita*	28 Nov, 2014
Dr. Nassr Allah Abdel Hameid	Natural feed additives for immuno-stimulation in fish	28 Nov, 2014
Mrs. Matkar	Scientific and spiritual aspects of breathing	27 Apr, 2014
Mr. Ranjit Bakshi	Ergonomics at workplace: Designs and postures for better efficiency	5 Sep, 2014
Dr. Adercolu Zaid (Visiting Professor from Nigeria)	Fisheries education in Nigeria and possible linkages with India	5 Aug, 2014
Dr. Jaganatham Challa	Revitalizing agricultural education in India and writing research proposals to external competitive grants	16 Jun, 2014
Dr. Gireesh Babu P.	SNP mining and applications	4 Apr, 2014
Dr. M. Makesh	Mucosal immune response in fish	4 Apr, 2014

Good Governance Day

Good Governance Day was celebrated at CIFE, Mumbai with a **Students' Speech Contest** held on December 23, 2014. Participants including faculty also expressed their views on '**Use of Technology and Innovation for Promotion of Good Governance in Higher Education**'. The First Prize was awarded to Ms. Ananya Ashok, while the Second and Third Prizes were bagged by Mr. Femi John Fawole and Ms. Mary Josephine, respectively. The Vice Chancellor Dr. W.S. Lakra congratulated the students on their performance and participation. He expressed his views on the subject and hoped that CIFE will set an example and strive to attain the next level in good governance.

13.3. Personality Development & Career Counselling Centre (PDCCC)

PDCCC with the aim of enhancing and grooming students' outer and inner self and also to help them in choosing right career options, organized several programmes for educational counselling, career opportunities and personality development of the students.

Educational Counselling PDCCC aims at educating students on the fellowship opportunities for higher education in India and abroad. Students are guided on the requirements for applying for a fellowship for pursuing Ph.D. degrees abroad.

Educational counselling was organised by expert from US-India Educational Foundation (USIEF) to orient students for higher studies in USA. This programme deals with Fulbright fellowships. USIEF promotes mutual understanding between the nationals of India and the nationals of the US through the educational exchange of outstanding scholars, professionals and students. A session on **Higher Education Opportunities in the United States of America** was conducted by Mr. Ryan Pereira, Program Officer, USIEF, on January 24, 2015. The session included Educational Advising Services for CIFE students in the USA. The feedback received form students and faculty was very good. Session on Higher Education Opportunities in the USA An interactive session on **Opportunities of Ph. D and Post Doc Opportunities in Germany** was organized for students of CIFE. Dr. Aram Mikaelyan, Post Doctoral Fellow at Max Planck Institute for Terrestrial Microbiology, Germany conducted the session 20 October, 2014. Feedback received from students and faculty was very good. Session on Opportunities of Ph. D and Post Doc Opportunities in Germany

A program on **Neuro-linguistic Program and Emotional Intelligence** which is an approach to communication and personal development was conducted by Mr.Animesh Gupta, Personality Coach and Counsellor on 4 July, 2014. Feedback was collected which was very good.

A session on **How to Face Interviews with Confidence** was conducted by Mr. Uday Acharya, from Mindflex Training Group which is a learning organization that imparts life skills training to educational institutions. This was organized on 13 March, 2015 and was attended by CIFE students and faculty.

13.4. New facilities added

Ornamental fish aquarium

Ornamental fish aquarium was inaugurated by Dr. Sanjeev Kumar Balyan, Hon'ble Minister of State for Agriculture & Food Processing Industries, Govt. of India during the NAAS Silver Jubilee symposium on 21 October, 2014.

Gymnasium-cum-indoor facility

A well equipped indoor facility with 2 badminton courts and 2 table Tennis courts was inaugurated by Shri Radha Mohan Singh, Hon'ble Minister of Agriculture, Govt. of India during XII Convocation on 7 November, 2014.

Cell culture laboratory

A new cell culture laboratory was made functional this year. The laboratory will cater to the institute's student research work on cell culture.

13.5. Swachh Bharat Abhiyan

The staff and students of CIFE, Mumbai pledged their commitment to cleanliness on the occasion of Gandhi Jayanti on 2nd October 2014. The CIFE Parivar also participated in full strength in a cleanliness drive conducted on the campus and its vicinity

Hindustan Times - Clean my Mumbai

M.F.Sc. students and staff also participated in the Hindustan Times, Clean my Mumbai Initiative at Versova beach, on 22 Feb, 2015. The whole stretch of Versova was cleaned up.

13.6. Hindi Sapthah

The hindi saptah was organized like every year in the month of September. It saw the participation of all the staff in the headquarters as well as sub-centres, wherein various competitions like *Nibandh, Shudh Lekhan, Kavita path, Antakshari* and lectures were held in hindi. A student seminar in hindi was also organized which later turned into poems recited in not only hindi but other regional languages also. In which students from different places and countries participated.

13.7. NET ARS/Prelims examinations

ICAR-CIFE being the centre for NET ARS/Prelims examinations conducted by ASRB New Delhi, conducted the exams during 22-28 Sept, 2014 smoothly.

Director addressing staff and students on Republic Day

Students geared up for Annual Sports

Chapter 14

Personalia

Details of Present Staff Members

CIFE Head Quarters, Mumbai

RMP

Director
Dr W.S. Lakra

Joint Director
Dr A.K. Pal

Scientific Staff

Head of Division
Dr M. Krishnan
Dr N.P. Sahu
Dr N.K. Chadha

Head of Division (Acting)
Dr Gopal Krishna
Dr S.K. Chakraborty
Dr. K. V. Rajendran

Principal Scientist
Dr K.K. Jain
Dr (Mrs) Kiran Dube Rawat
Dr S.N. Ojha
Dr Nalini Ranjan Kumar
Dr Geetanjali Deshmukhe
Dr (Mrs.) Aparna Choudhary
Dr B.B. Nayak
Dr S. Jahageerdar
Dr V.K. Tiwari
Dr Arpita Sharma
Dr K. Pani Prasad
Dr A.K. Reddy
Dr P.P. Srivastava
Dr Gaurav Rathore
Dr Ramasubramanian V
Dr (Mrs) Latha Shenoy
Dr R.P. Raman
Dr C.S. Chaturvedi
Dr Ashok Kumar Jaiswar
Dr Swadesh Prakash
Dr Satya Prakash Shukla
Dr Gayatri Tripathi
Dr Chandra Prakash
Dr S. Munil Kumar
Dr Subodh Gupta

Senior Scientist
Dr Rupam Sharma
Dr Makesh M
Dr Asha T. Landge
Dr. Ashutosh Deo
Dr Zeba Jaffer Abidi
Dr S. Das Gupta
Dr Sanath Kumar H.
Dr Megha Bedekar Kadam
Dr Rama Sharma
Dr A.K. Balange
Dr Ajit Kumar Verma
Dr P.S. Ananthan

Scientist (Sr. Scale)
Dr Suryakant Patil

Scientist
Dr (Mrs) Paromita B. Sawant
Mrs Vidyashree Bharati
Dr Babita Rani A.M.
Dr A. Pavan Kumar
Dr Gireesh Babu Pathakota
Dr Kundan Kumar
Dr Murlidhar Ande
Mr Vinod Kumar Yadav
Dr Nagalaxmi K.
Mrs Manjusha L.
Dr Sujata Sahoo
Dr. Martin Xavier K.A.
Ms. Shamna N.
Mr. Dhamotharan K.
Mr. Sikandra Kumar
Ms. Rathi Bhuvaneswari G.
Mr. Saurav Kumar
Mr. Shashi Bhushan
Ms. Jeena K.
Ms. Tincy Verghese
Mr. Mujahid Khan A. Pathan
Dr. Md. Aklakur

Technical Staff

Chief Technical Officer (T-9)
Mr Josey Jacob
Mr Alkesh Dwivedi
Dr S.G.S .Zaidi
Mr R.D. Tandel
Dr S.K. Pandey
Mr S.L. Kotian
Mr S.S. Kamat
Dr M.K. Chouksey

Asstt Chief Technical Officer (T-7/8)
Mr Chandrakant M.H.
Mr S.K. Sharma
Mr D.R. Khogare
Mr Dasari Bhoomaiah
Mr Ram Singh
Mr P.K. Das
Dr (Mrs) Nalini Poojary

Senior Technical Officer (T-6)
Mr A.K. Padmanabhan
Mr Subhash Chand
Ms Revati B. Dhongde
Mrs Rekha Nair

Technical Officer (T-5)
Mr S.K. Chodankar
Mrs Madhavi Pikle
Mrs S.M. Bagwe
Mr S.M. Shinde
Mr R.G. Kudale
Mr Bhagat Singh Rawat
Mr C.B. Kareer
Mr B.G.Mandhare
Mrs S.S. Gajbhiye
Mr J.M. Koli
Mrs S.P. Nalawade
Mrs Rajani H. Khandgale
Mr S. Maity

Sr. Technical Assistant (T-4)
Shri Sanjeevan Kumar
Mr S.R. Bandkar
Mrs Bharati Ghagare
Mr N.K. Aglave
Mr B.J. Rathod
Mr Avinash Sable
Mr Baburam Jaiswar
Mr Suryakant L. Koli
Mr B.T. Phande
Mr Sagar Suresh Sawant

Technical Assistant (T-3)
Mr Anil Kumar Kulsange
Mr Rajarshee Moitra
Mr Yogesh Jadhao
Mr Vijay Kumar Gupta
Mr Pawan Kumar
Mr K. Dhana Raju
Mr Sikandar S. Hussain
Mr A.L. Kokane
Mr V.G. Dhindore
Mr K.V. Rajendran
Mr A.P. Dhawde
Mr Arun Puri Gosavi
Mr R.D. Deshmukh
Mrs Reshma Raje
Mr Dhanpat Singh Rawat

Sr. Technician (T-2)
Mr V.K. Bhave
Mr A.N. Mahadik
Mr Mohd. Baqar

Technician (T-1)
Mr Dhiraj Prakash
Mr Mohd Sadiq M. Mulla
Mr V. Shivaji
Mr Abhijeet V. Jadhav
Mr Nisha A. Lade

Administrative Staff

Sr. Registrar
Mr G.R. Desh Bandhu

Chief Finance & Accounts Officer
Mr Suresh Chandra

Sr. Administrative Officer
Mr Mahesh B. Khubdikar

Dy. Director (Official Language)
Dr R.P. Uniyal

Asstt. Admn .Officer
Mr B.L. Kokkula
Mrs N.Y. Raorane
Mrs Sushma Singh
Mrs Deepika N. Behl
Mrs S.R. Wadhavkar
Ms. Asha Dhurve

Private Secretary
Mr G.S. Fernandes
Mrs S.R. Arutla
Mr P.R. Ninawe

Personal Assistant
Mrs Pragati R. Gadre

Assistant
Mrs F.G. Fernandes
Ms C.S. Khundol
Mr D.S. Ingale
Mr R.R. Kadam
Mrs Swati S. Koli
Mr V.S. Kuveskar
Mr Suraj Gupta
Mr D.V. Raorane
Mrs S.V. Pawar
Mrs A.U. Joshi
Mr A.G. Kolambkar

Upper Division Clerk
Mrs Sanyuja S. Parab
Mr B.P. Chauhan
Mr N.L. Ghane
Mr P.G. Angne
Mr M.B. Waghela
Mrs C.C. Raut
Mrs Anu Grover

Lower Division Clerk
Mr S.H. Bhosale
Mr Shirish P. Malvankar
Mr R.N. Kamble
Mr Ram A. Shinde
Mr Prasenjit P. Sonawane
Mr Kishore Bose
Mr Kunal Maan

Skilled Support Staff
Mr B.N. Sukur
Mr Madhu Wasnik
Mr G.G. Zendekar
Mr Surajbali R. Jaiswar
Mr V.M. Patil
Mr B.S. Tamankar
Mr Ashok R. More
Mr D.B. Gaikwad
Mr Sitaram B. Padyal
Mrs V.J. Tambe
Mrs K.R. Ahire
Mr T.G. Gaikwad
Mr J.K. Makhwana
Mrs Kamala Jai Kishore
Mr Bandu R. Chavan
Mr Ankush R. Dore
Mr M.P. Kotian
Mr G.B. Kamble
Mr Ashok R. Shingade
Mr Jagdish N. Dhanu
Mr Vasant N. Ondkar
Mr Arvind M. Lavande
Mr Vinod Kumar Yadav
Mrs R.H. Chavan
Mr Ganesh N. Zendekar
Mr Ankush N. Joyashi
Mr Anil D. Sonawane
Mrs Reshma Naik
Mr Sambhaji Shelke
Mr Ninad V. Kandalgaonkar
Mr Fakirmayan U. Mullaji
Mrs Revati Venkateshvaran
Ms. Ujawala V. Tiwari
Mr. Rohit K

CIFE Kakinada Centre

Scientist
Dr Suresh Babu
Ms. Thongam Ibemcha Chanu
Mr. Arun Sharma

Technical Officer (T-7/8)
Mr P. Rami Reddy
Mr V.N. Acharyulu
Mr K. Murli Mohan

Technical Officer (T-6)
Mr K.B.S. Murthy
Mr P. Srinivas Rao
Mr J.K. Prasad
Mr R.R.S. Patnaik

T-I-3
Mr M. Satyanarayana

T-1
Mr A. Gurraiah

Cook
Mr Kamaraju

Assistant
Mr B. Laxman Rao

Lower Division Clerk
Mrs M. Rama Mani

Skilled Support Staff
Mr M. Krishna
Mr K. Satyanarayana
Mr K. Niranjan
Mr N. Venkata Ramana
Mr K. Prasad
Mr V. Shivaji
Mr O. Veera Raju
Mr T. Satyanarayana
Mr P.V.K. Reddy
Mr P.D. Reddy
Mr S. Valisha
Mr A.L. Reddy
Mr S.S. Reddy
Mr Y. Buchilingam
Mr M. Govindu
Mr M.A. Rao
Mr G.V.V. Satyanarayana
Mr S.N. Saheb

CIFE Kolkata Centre

Officer Incharge/Principal Scientist
Dr B.K. Mahapatra

Principal Scientist
Dr G.H. Pailan

Senior Scientist
Dr Parimal Sardar
Dr Shubendu Dutta
Dr S. Munil Kumar

Asstt Chief Technical Officer (T-7/8)
Dr Ashok Biswas

Technical Officer (T-5)
Mr R.K. Mondal

Sr. Technical Assistant (T-4)
Mr P.K. Patra

Technical Assistant (T-3)
Mr S.K. Das
Mr Prakash Kumar Behera
Mrs G. Aruna Devi

Sr. Technician (T-2)
Mr T.K. Ghosh

Personal Secretary
Ms Kaberi Biswas

Assistant
Mr C.N. Sahani

Upper Division Clerk
Mr P.K. De

Lower Division Clerk
Mr Ram Milan Singh

Skilled Support Staff
Mr T.C. Balmiki
Mr R.N. Prasad
Mr Ramesh Chowdhary
Mrs Suman Pandey

CIFE Powerkheda Centre

Officer Incharge/Principal Scientist
Dr Somdutt

Scientist
Dr. Sunil Kumar

Asstt Chief Technical Officer (T-7/8)
Dr R.K.Upadhyay

Technical Officer (T-5)
Mr L.P. Bamalia
Mr Hasan Javed

Sr. Technical Assistant (T-4)
Mr Gurubachan Singh

Sr. Technician (T-2)
Mr Anup Singh

Technician (T-1)
Mr Raghuvir Prasad

Lower Division Clerk
Mr Hari M. Potpose

Skilled Support Staff
Mr Hari Singh
Mr Lallu Prasad
Mr Vishnu Lal
Mr Mangli Prasad
Mr Surendra Kumar
Mr Ram Keval Prasad
Mr Shambhu Dayal
Mr Manoharlal
Mr Ram Swaroop
Mr S. Prajapati
Mr Gyan Chand

CIFE Rohtak Centre

Officer Incharge/Scientist
Mr Hari Krishna

Scientist
Mr. Arun Sudhagar S.
Mrs Thankam Teresa Paul

Technical Officer (T-5)
Mr Ashok Kumar

Technical Assistant (T-3)
Mr Satyendra Kumar Singh
Mr Lokesh Kumar

Sr. Technician (T-2)
Mr Krishan Kumar

Assistant
Mr V.K. Sinha

Skilled Support Staff
Mr Gyani Ram
Mr Gyani Chand
Mr Lavesh Kumar

Transfer

Sl. No.	Name of the Employee	Transfer to	Date of Relieving
1	Dr. C.S.Purushothaman, HOD	CMFRI, Kochi	6/5/2014
2	Dr. G.Venkateshwarlu, PS	ICAR Hqrs.	2/9/2014
3	Dr. Vennila, Sr. Scientist	SBI, Coimbatore	31/10/2014
4	Shri Deepak M.Bhokase, S.S.S.	ICAR Hqrs.	21/3/2015
5	Mr. Dhiraj Prakash, Technician.	ICAR, RCE Region, Patna	28/3/2015

Appointments

S.No	Name	Designation	Date of Joining
1	Dr. Sunil Kumar Nayak	Scientist	01/04/2014
2	Ms. Thongam Ibemcha Chanu	Scientist	03/04/2014
3	Mr. Sikandra Kumar	Scientist	08/04/2014
4	Mr. Mujahidkhan Ajamalkhan Pathan	Scientist	08/04/2014
5	Mr. Shashi Bhushan	Scientist	09/04/2014
6	Ms. Rathi Bhuvaneswari G	Scientist	09/04/2014
7	Ms. Tincy Verghese	Scientist	09/04/2014
8	Ms. Shamna N.	Scientist	09/04/2014
9	Mr. Arun Sharma	Scientist	09/04/2014
10	Mr. Arun Sudhagar S.	Scientist	09/04/2014
11	Ms. Jeena K.	Scientist	09/04/2014
12	Mr. Saurav Kumar	Scientist	09/04/2014
13	Mr. Dhamotharan K	Scientist	09/04/2014
14	Dr. Ashutosh Dharmendra Deo	Sr. Scientist	12/05/2014
15	Dr. Arup Ratan Sen	Principal Scientist	12/06/2014
16	Dr. Md Aklakur	Scientist	01/11/2014

Retirements

Sl. No.	Name	Designation	Date of retirement
1	Shri Josey Jacob	T-9	31/05/2014
2.	Mrs. Valsa Pavithran	AO	30/09/2014
3.	Shri S.K. Chodankar	T-5	31/12/2014

Promotion

S.No.	Staff	From	To	*w.e.f*
1.	Mr. L.P. Bamalia	Tech-Officer.	Sr. Tech- Officer	01/07/2011
2.	Dr. R.P.Raman	Sr. Scientist	Principal Scientist	10/11/2012
3.	Dr. Parimal Sardar	Sr. Scientist	Principal Scientist	23/12/2012
4.	Dr. Swadesh Prakash	Sr. Scientist	Principal Scientist	06/07/2013
5.	Dr. Subodh Gupta	Sr. Scientist	Principal Scientist	23/07/2013
6.	Dr. Chandra Prakash	Sr. Scientist	Principal Scientist	26/07/2013
7.	Dr. Munil Kumar	Sr. Scientist	Principal Scientist	30/07/2013
8.	Mr. Sagar S. Sawant	Tech-Assistant	Sr. Tech-Assistant	02/08/2013
9.	Dr. Gayatri Tripathi	Sr. Scientist	Principal Scientist	03/08/2013
10.	Dr. C.S. Chaturvedi	Sr. Scientist	Principal Scientist	16/08/2013
11.	Dr. Shubhandu Dutta	Sr. Scientist	Principal scientist	16/08/2013
12.	Dr. S. P. Shukla	Sr. Scientist	Principal Scientist	31/08/2013
13.	Dr. Ashok Jaiswar	Sr. Scientist	Principal Scientist	07/12/2013
14.	Dr. M. K. Chowksey	Asstt-Chief-Tech-Officer.	Chief-Tech-Officer	01/01/2014
15.	Mr. Satish S. Kamat	Asstt-Chief-Tech-Officer	Chief-Tech-Officer	01/01/2014
16.	Dr. R. K. Upadhyay	Asstt-Chief-Tech-Officer	Chief-Tech-Officer	01/01/2014
17.	Mrs. Anagha U. Joshi	U.D.C.	Assistant	04/04/2014
18.	Mr. Ashok G. Kolambkar	U.D.C.	Assistant	04/04/2014
19.	Mrs. Ramamani	L.D.C.	U.D.C.	05/04/2014
20.	Mrs. C.C. Raut	L.D.C.	U.D.C.	05/04/2014
21.	Mr. Dhanpat Singh Rawat	Sr. Technician	Technician Assistant	06/04/2014
22.	Dr. A.K. Verma	Scientist	Sr. Scientist	21/04/2014
23.	Mrs. Sarala Arutla	Personal Assistant	Privet Secretary	25/09/2014
24.	Mrs. Sujata Powar	U.D.C.	Assistant.	25/09/2014
25.	Mrs. Anu Grover	L.D.C.	UDC	26/09/2014
26.	Mrs. Pragati Gadre	Steno Gr-III	Personal Assistant	01/10/2014
27.	Mr. T. G. Gaikwad	S.S.S.	T-1 (Field & farm Tech)	27/11/2014
28.	Dr. N. K. Chadha	Principal Scientist	Head (AQ)(Direct)	19/02/2015

Chapter 15

हिन्दी प्रगति प्रतिवेदन

15.1 प्रकाशन

संस्थान की वार्षिक गृहपत्रिका **"जलचरी अंक -21"** को प्रकाशित किया गया। इस पत्रिका में 28 लेख हैं।

- "कृषि की आधुनिक प्रौद्योगिकी की उपलब्धियां एवं चुनौतियां" विषय पर दिनांक 16 दिसंबर 2013 को आयोजित राष्ट्रीय संगोष्ठी में प्रस्तुत प्रमुख लेखों व पेपरों के साथ ही संगोष्ठी की कार्यवाही तथा प्रमुख संस्तुतियों को संकलित कर एक स्मारिका का मुद्रण कार्य किया गया। इस पत्रिका में कुल 40 लेख हैं। इसका संपादन डा. वजीर एस. लाकड़ा, निदेशक/कुलपति, डा. नरेन्द्र कुमार चड्डा, प्रधान वैज्ञानिक, डा. नलिनी रंजन कुमार, प्रधान वैज्ञानिक, डा. अर्पिता शर्मा, प्रधान वैज्ञानिक एवं डा. राजेश्वर उनियाल, उप निदेशक (राजभाषा) ने किया।
- "छत्तीसगढ़ के मात्स्यिकी क्षेत्र में स्वयं सहायता समूह का कार्य निष्पादन - एक गुणावलोकन" विषय के शोध निबंध पर आधारित "रायपुर, छत्तीसगढ़ की मात्स्यिकी में स्वयं सहायता समूहों का योगदान" नामक पुस्तक का प्रकाशन किया गया। इस पुस्तक का लेखन सुश्री श्वेता कुमारी, डा. अर्पिता शर्मा एवं डा. सी. एस. चतुर्वेदी ने किया तथा इसका मार्गदर्शन डा. वजीर एस. लाकड़ा ने किया।
- मराठी में "गोडया पाण्यातील कोळंबी शेती" विषय पर विस्तार पुस्तिका का प्रकाशन किया गया। इस पुस्तिका का लेखन डा. मेघा बेडेकर, डा. पारोमिता बॅनर्जी एवं ए. के. रेड्डी ने किया।
- मराठी में "निमखाऱ्या पाण्यातील कोळंबी शेती" विषय पर विस्तार पुस्तिका का प्रकाशन किया गया। इस पुस्तिका का लेखन डा. मेघा बेडेकर, डा. पारोमिता बॅनर्जी एवं ए. के. रेड्डी ने किया।
- डा.वजीर सिंह लाकड़ा, निदेशक/कुलपति के मार्गदर्शन में "मीठे पानी में मछली पालन" विषय पर एक विस्तार पुस्तिका का प्रकाशन किया गया। इसका लेखन डा. वीरेन्द्र कुमार तिवारी ने किया।
- संस्थान का वार्षिक प्रतिवेदन (2013-14) का प्रकाशन हिन्दी तथा अंग्रेजी में किया गया।
- "मोतीहारी में अन्तरस्थलीय मात्स्यिकी विकास (चौर एवं मन)" विषय पर एक तकनीकी बुलेटीन हिन्दी में प्रकाशन हेतु प्रस्तुत किया। इसका लेखन डा. वजीर एस. लाकड़ा एवं डा. बी. के. महापात्रा ने किया।
- डा. वजीर सिंह लाकड़ा, डा. ए. के. रेड्डी एवं श्री वी. हरिकृष्णन का अंग्रेजी में प्रकाशित "पेसिफिक सफेद श्रिंप के व्यवसायिक पालन हेतु प्रौद्योगिकी" विषय का तकनीकी बुलेटिन हिन्दी में प्रकाशन हेतु प्रस्तुत किया गया।
- दिनांक 29 जनवरी 2015 को कृषि की माननीय संसदीय समिति ने भा. कृ. अनु प. केन्द्रीय मात्स्यिकी शिक्षा संस्थान का निरीक्षण किया इस हेतु निर्धारित प्रश्नावली व सूचना बुलेटिन आदि समस्त सामग्रियां हिन्दी में उपलब्ध कराई गई।

15.2. शैक्षणिक

सुश्री श्वेता कुमारी, एम. एम. एस. सी., मत्स्य विस्तार 2012-14 की छात्रा ने अपना "छत्तीसगढ़ के मात्स्यिकी क्षेत्र में स्वयं सहायता समूह का कार्य निष्पादन - एक गुणावलोकन" विषय का शोध निबंध डा. अर्पिता शर्मा, प्रधान वैज्ञानिक के मार्गदर्शन में हिन्दी में प्रस्तुत किया।

- संस्थान के एम. एफ. एस. सी. सत्र - 2014 -16 के प्रथम वर्ष के छात्र-छात्राओं हेतु हिन्दी जलवाणी एक क्रेडिट कोर्स की कक्षाएं नियमित रुप से संचालित की गई। इस पाठयक्रम में हिन्दी जाननेवाले, हिन्दी का

ज्ञान नहीं रखनेवाले छात्रों के साथ ही विदेशी छात्रों के लिए भी अलग-अलग कक्षाएं संचालित की गई ।

15.3. कार्यान्वयन

राजभाषा कार्यान्वयन समिति की चार बैठकें नियमित रुप से संपन्न हुई तथा बैठकों में लिए गए निर्णयों पर अनुवर्ती कार्रवाई की जा रही है ।

- नगर राजभाषा कार्यान्वयन समिति, उत्तर मुंबई (कार्यालय) की छमाही बैठकें नियमित रुप से संपन्न हुई तथा बैठकों में लिए गए निर्णयों पर अनुवर्ती कार्रवाई की जा रही है ।
- हिन्दी पखवाड़ा प्रतिवर्ष की भांति संस्थान के मुख्यालय एवं इसके चारों केन्द्रों में दिनांक 12 सितम्बर से 26 सितम्बर 2014 तक मनाया गया । इसका उद्घाटन डा. वजीर सिंह लाकड़ा, निदेशक, कुलपति के कर कमलों से किया गया । इस अवसर पर संस्थान के अधिकारियों / कर्मचारियों / छात्र - छात्राओं के साथ ही संस्थान के परिवारजनों हेतु निबंध / लेखन / भाषण / गीत-काव्य/महिला दिवस व चित्रकला जैसी विभिन्न प्रतियोगिताएं आयोजित की गई ।
- केन्द्रीय मात्स्यिकी शिक्षा संस्थान का 12 वां दीक्षांत समारोह दिनांक 7 नवम्बर 2014 को संपन्न हुआ, जिसका पूरा संचालन हिन्दी में ही किया गया ।
- संस्थान एवं इसके उपकेन्द्रों में हिन्दी की प्रगति हेतु वैज्ञानिक, प्रशासनिक एवं समस्त कार्य नियमित रुप से किया गया ।

15.4. अवार्ड / पुरस्कार

- भारतीय कृषि अनुसंधान परिषद के अधीनस्थ संस्थानों में राजभाषा हिन्दी के प्रयोग को बढ़ावा देने के लिए **राजर्षि टंडन राजभाषा पुरस्कार** योजना संचालित की जाती है । इस योजना के अन्तर्गत वर्ष 2012-13 के दौरान हिन्दी में अपना सर्वाधिक कार्य करने पर केन्द्रीय मात्स्यिकी शिक्षा संस्थान, मुंबई को **द्वितीय पुरस्कार** प्रदान किया गया । यह पुरस्कार दिनांक 28 अप्रैल 2014 को नास कॉम्प्लेक्स, नई दिल्ली में आयोजित समारोह में **डा. एस. अय्यप्पन**, सचिव एवं महानिदेशक के कर कमलों से संस्थान के **डा. वजीर एस. लाकड़ा**, निदेशक / कुलपति तथा **डा. राजेश्वर उनियाल**, उप निदेशक (राजभाषा) ने प्राप्त किया ।
- डा. राजेश्वर उनियाल को इस वर्ष **महाराष्ट्र राज्य हिन्दी साहित्य अकादमी** ने उनके उपन्यास **भाडे का रिक्शा** हेतु **श्री जैनेन्द्र कुमार अवार्ड** प्रदान कर सम्मानित किया ।

15.5. अन्य

- संस्थान का हिन्दी पुस्तकालय सुचारु रूप से संचालित किया जा रहा है ।
- संस्थान के कई अल्पकालीन प्रशिक्षण कार्यक्रम हिन्दी तथा भारतीय भाषा में संचालित किए जाते हैं ।
- विभिन्न अवसरों पर आयोजित होने वाले किसान मेला व प्रदर्शनी आदि में विस्तार समितियां हिन्दी में उपलब्ध कराई जाती है ।
- संस्थान के स्वतंत्रता दिवस, गणतंत्र दिवस, वार्षिक दिवस सहित लगभग सभी समारोह आदि हिन्दी में ही संचालित किए जाते हैं ।

Annexure

RFD 2013-2014
and
Performance Evaluation Report

Results-Framework Document (RFD)

for

Central Institute of Fisheries Education

(2013 – 2014)

Address	Panch Marg, Off Yari Road, Versova, Andheri (West), Mumbai – 400 061 (Maharashtra)
Website ID	http://www.cife.edu.in

Section 1:

Vision, Mission, Objectives and Functions

Vision

To be a world class organisation providing leadership in fisheries education and research

Mission

To achieve academic and research excellence by creating state-of-the-art infrastructure and attracting globally competent faculty and students.

Objectives

1. To conduct academic programs for HRD
2. To conduct basic and strategic research in emerging areas of fisheries science
3. To conduct training programs in fisheries sector

Functions

- To attend to matters relating to all aspects of higher education in fisheries science, research and training
- To participate in national and international collaborations
- To participate in national and international conferences, associations and other bodies dealing with fisheries research and education
- To identify researchable issues, planning strategies and action plans to realize the vision and mandate of the institute.

Section 2:

Inter se **Priorities among Key Objectives, Success Indicators and Targets**

S. No.	Objectives	Weight	Actions	Success Indicators	Unit	Weight	Target / Criteria Value				
							Excellent	Very Good	Good	Fair	Poor
							100%	90%	80%	70%	60%
1	To conduct academic programs for HRD	50	HRD in specialized disciplines	No. of students passed	Number	50	85	82	80	75	70
2	To conduct basic and strategic research in emerging areas of fisheries science	18	Aquaculture Production Enhancement	Utilization of Inland Saline Water for Aquaculture	No of species	3	2	1	0	0	0
				Breeding of ornamental fish in captive condition	No. of species	3	5	4	3	2	1
			Development of molecular markers for stock identification	Development of microsatellite markers in *Clarias batrachus*	Number	3	10	8	6	4	3
			Bio-diversity conservation and management	Development of bio-diversity indices and categorisation of species	Number of explorations	3	12	11	10	9	8

				DNA barcoding of fish	Number	3	50	45	40	35	30
			To delineate physio-metabolic and immune response of fish to dietary nutraceuticals	Enhancement in growth and immunity of fish	Number	3	2	1	0	0	0
3	To conduct training programs in fisheries sector	21	Training and skill up-gradation	Number of persons trained	Number	21	600	550	500	450	400
	Efficient Functioning of the RFD System	11	Timely submission of Draft RFD (2013-14) for approval	On-time submission	Date	2	15/5/2013	16/5/2013	17/05/2013	20/5/2013	21/5/2013
			Timely submission of Results for RFD (2012-13)	On-time submission	Date	1	01/5/2013	02/5/2013	05/5/2013	06/5/2013	07/5/2013
	Administrative Reforms		Implement ISO 9001 as per approved action plan	% implementation	%	2	100	95	90	85	80
			Prepare an action plan for innovation	On-time submission	Date	2	30/7/2013	10/8/2013	20/8/2013	30/8/2013	10/9/2013

	Improving internal efficiency / responsiveness/service delivery of Ministry/Department		Implementation of Sevottam	Independent Audit of Implementation of Citizen's Charter	%	2	100	95	90	85	80
				Independent Audit of implementation of public grievance redressal system	%	2	100	95	90	85	80

Section 3 – Trend Values of the Success Indicators

S. No.	Objectives	Actions	Success Indicators	Unit	Actual Value for FY 11/12	Actual Value for FY 12/13	Target Value for FY 13/14	Projected Value for FY 14/15	Projected Value for FY 15/16
1	To conduct academic programs for HRD	HRD in specialized disciplines	No. of students passed	Number	88	84	82	85	85
2	To conduct basic and strategic research in emerging areas of fisheries science	Aquaculture Production Enhancement	Utilization of Inland Saline Water for Aquaculture	No of Species	-	-	1	2	2
			Breeding of ornamental fish in captive condition	No. of species	-	-	4	5	6
		Development of molecular markers for stock identification	Development of microsatellite markers in *Clarias batrachus*	Number	-	-	8	10	12
		Bio-diversity conservation and management	Development of bio-diversity indices and categorisation of species	Number of explorations	-	-	11	12	12
			DNA barcoding of fish	Number	-	-	45	50	55

		To delineate physio-metabolic and immune response of fish to dietary nutraceuticals	Enhancement in growth and immunity of fish	Number	NA	3	1	2	2
3	To conduct training programs in fisheries	Training and skill up-gradation	Number of persons trained	Number	700	777	550	575	600
	Efficient Functioning of the RFD System	Timely submission of Draft RFD (2013-14) for approval	On-time submission	Date			16/05/ 2013		
		Timely submission of Results for RFD (2012-13)	On-time submission	Date			02/05/2013		
	Administrative Reforms	Implement ISO 9001 as per the approved action plan	% Implementation	%			95		
		Prepare an action plan for Innovation	On-time submission	Date			10/08/2013		
	Improving internal efficiency / responsiveness / service delivery of Ministry / Department	Implementation of Sevottam	Independent Audit of Implementation of Citizen's Charter	%			95		
			Independent Audit of implementation of public grievance redressal system	%			95		

Section 4: Acronyms

S No	Acronym	Description
1	HRD	Human Resource Development
2	DNA	De-oxy Ribonucleic Acid
3	ISO	International Organization for Standardization
4	M. F. Sc.	Master of Fisheries Science
5	Ph. D.	Doctor of Philosophy
6	CIFE	Central Institute of Fisheries Education
7	CAFT	Centre of Advanced Faculty Training
8	ICCR	Indian Council for Cultural Relations
9	UGC	University Grants Commission
10	DBT	Department of Biotechnology
11	NAIP	National Agricultural Innovation Project
12	NFDB	National Fisheries Development Board
13	ARS	Agriculture Research Service
14	SAUs	State Agricultural Universities
15	SRF	Senior Research Fellow
16	DST	Department of Science and Technology
17	DAE	Department of Atomic Energy
18	ICAR	Indian Council of Agricultural Research
19	CAUs	Central Agricultural Universities

Section 4:
Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No.	Success indicator	Description	Definition	Measurement	General Comments
1	No. of students passed	Trained human resource in specialized disciplines of Fisheries Science	M.F.Sc. and Ph.D. students	No. of students passed out	-
2	Utilization of Inland Saline Water for Aquaculture	Inland saline soils are not fit for agriculture but can be utilized for aquaculture	Culture of fish species in inland saline water	No. of species	-
3	Breeding of ornamental fish in captive condition	Ornamental fish species have tremendous commercial potential	Standardization of breeding technique of ornamental fish	Number	-
4	Development of microsatellite markers in *Clarias batrachus*	Microsatellite markers are useful tool for stock characterization	Microsatellite markers development for stock characterization	Number	-
5	Development of bio-diversity indices and categorization of species	Biodiversity assessment for stock evaluation	Biodiversity assessment for conservation	Number of explorations	-
6	DNA barcoding of fish	DNA barcodes help in identifying a species	DNA sequences are generated as Barcodes	Number	-
7	Enhancement in growth and immunity of fish	Nutraceuticals incorporation in feed helps in growth and immunity of fish	Effect of nutraceuticals on growth and immunity of fish	Number	-
8	Number of persons trained	Training of stakeholders in different aspects of fisheries	Training for skill development	Number	-

Section 5:

Specific Performance Requirements from other Departments

Location Type	State	Organization Type	Organization name	Relevant Success Indicator	What is your requirement from this organization	Justification for this requirement	Please quantify your requirement from this organization	What happens if your requirement is not met

Not applicable

Section 6:
Outcome/Impact of activities of Organisation

S. No.	Outcome/Impact of Organisation	Jointly responsible for influencing this outcome/impact with the following organizations/ depts./ministries	Success Indicators	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Qualified Human Resources developed at CIFE are contributing overall growth of fisheries in the country. Ph.D. research leads to advancement of knowledge of fisheries science which has immediate & long term, effect on enhancing fish production and advancement of fisheries sector of the country.	ICCR, UGC, DBT etc.	Passed out students are well placed in ARS (28 %), SAU's (16%), state govt. departments (23%), banks (10%), private industry (8%), entrepreneurship (5%), as SRF (5%) and studying abroad (5%).	Number	88	84	82	85	85
2	Trainings conducted for farmers have resulted in enhancement of their skill and subsequent growth in fish production. CAFT & summer/ winter schools improved the teaching and research capabilities of the faculty working in	NAIP, NFDB etc.	Enhanced skill development and job opportunities in fisheries sector	% improvement	45	47	50	50	50

	ICAR/SAU/CAUs.								
3	Research and technology development as well as consultancy services will lead to enhanced production and productivity of fish. Publications which are the results of research work carried out by students and faculty lead to dissemination of technologies.	NAIP, DST, Ministry of Earth Sciences, DBT, NFDB, DAE, etc.	Number of technologies developed and demonstrated/ patents/ copyrights	Number	2	2	2	2	2

Annual Achievement Report (April 1, 2013 to March 31, 2014) Performance Evaluation Report of RFD 2013-2014 of CIFE, Mumbai
Name of the Division: Fisheries
Name of Institute: Central Institute of Fisheries Education, Mumbai
RFD Nodal Officer: Dr. Neelam Saharan

S. No.	Objectives	Weight (%)	Actions	Success Indicators	Unit	Weight	Target / Criteria Value					Achievements	Performance		% Achievement against target value of 90% column score	Reason for shortfalls or excessive achievements if applicable
							Excellent	Very Good	Good	Fair	Poor		Raw Score	Weighted Score		
							100 %	90%	80%	70%	60%					
1	To conduct academic programs for HRD	50	HRD in specialized disciplines	No. of students passed/ thesis submitted	Number	50	85	82	80	75	70	81	85	42.5	98.78	No. of thesis submitted were 90 but viva voce of only 81 students was conducted
2	To conduct basic and strategic research in emerging areas of fisheries science	18	Aquaculture Production Enhancement	Utilization of Inland Saline Water for Aquaculture	No of species	3	2	1	-	-	-	2	100	3.0	200	-
				Breeding of ornamental fish in captive	No. of species	3	5	4	3	2	-	5	100	3.0	125	-

				condition												
			Development of molecular markers for stock identification	Development of microsatellite markers in Clarias batrachus	Number	3	10	8	6	4	3	12	100	3.0	150	Sometimes more than one repeats were obtained from one clone.
			Bio diversity conservation and management	Assessment of biodiversity	Number of explorations	3	12	11	10	9	8	15	100	3.0	136	More sites were surveyed for potential resources
				DNA barcoding of fish	Number	3	50	45	40	35	30	55	100	3.0	122.2	More samples were obtained than anticipated.
			To delineate physio-metabolic and immune response of fish to dietary nutraceuticals	Enhancement in growth and immunity of fish	Number	3	3	2	1	-	-	2	90	2.7	100	-
3	To conduct training programs in fisheries sector	21	Training and skill up-gradation	Number of persons trained	Number	21	600	550	500	450	400	1352	100	21.0	245.8	Special programs for fish farmers of Katihar were

																conducted on special advice from ICAR. Several self sponsored, NEH fund, State Govt. NFDB, World Bank etc. sponsored training programs were conducted on their request.
	Efficient Functioning of the RFD System	11	Timely submission of Draft RFD (2013-14) for approval	On-time submission	Date	2	15/5/2013	16/5/2013	17/05/2013	20/5/2013	21/5/2013	03/05/2013	100	2		-
			Timely submission of Results for 2012-13	On-time submission	Date	1	01/5/2013	02/5/2013	05/5/2013	06/5/2013	07/5/2013	05/04/2013	100	1		-
	Administrative Reforms		Implement ISO 9001 as per approved action plan	% implementation	%	2	100	95	90	85	80	90	80	1.6		-

			Prepare an action plan for innovation	On-time submission	Date	2	30/7/2013	10/8/2013	20/8/2013	30/8/2013	10/9/2013	31/07/2013	99	1.98		-
	Improving internal efficiency /responsiveness/ service delivery of Ministry/Department		Implementation of Sevottam	Independent Audit of Implementation of Citizen's Charter	%	2	100	95	90	85	80	95	90	1.8		-
				Independent Audit of implementation of public grievance redressal system	%	2	100	95	90	85	80	100	100	2		-

Total Composite Score = 91.58 %

Rating: Very Good

Dr. Neelam Saharan

Nodal **Officer, CIFE, Mumbai**

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