

वार्षिक प्रतिवेदन



Annual Report
2000-2001

education for blue revolution



Mumbai



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Central Institute of Fisheries Education, Mumbai, the premier Institute of the Indian Council of Agricultural Research for fisheries education has been contributing to the HRD in the sector for nearly four decades. The multidimensional programmes of education, research, training and extension received keen attention during the year 2000-2001, along with emphasis on infrastructure development.

At the dawn of a new millennium, research programmes at the Headquarters and centres were reoriented to address the problems in different areas of the sector. They were streamlined based on concept of project-based budgeting. Aspects of coastal zone management, cage culture, population genetics of *Penaeus monodon*, inbreeding in carp hatcheries in Maharashtra, coastal biodiversity, marine biotoxins, pesticide toxicity to fish, fish stock assessment and management of demersal fishery resources, DNA fingerprinting of Seabass and feeds and feeding stimulants were considered during the year. Components of biotechnology and social sciences were given greater emphasis in the programmes. Staff research, students' research and those under the externally funded projects were integrated to complement the efforts. In line with the emphasis of the ICAR on PME mechanism, quarterly meetings were held for monitoring the progress of projects.

Being the nodal institution for fisheries education in the country, a national meet was organised at CIFE to assess the manpower needs and identify the HRD needs. Along with plans for

new programmes at Masters' and Doctoral degrees levels, courses in Fisheries business management and distance education were planned. Efforts were made to revise the syllabi of all the courses in tune with the changes that have come about in the sector in recent years. Three endowments of Dr. Hiralal Chaudhuri, Tata Trusts and Late Dr. D.R. Jalihal for acknowledging the academic and research achievements of the staff and students were instituted during the year. HRD in different forms of training programmes was undertaken. The Fifth Convocation of the Deemed University graced by the Hon'ble Union Agriculture Minister, Shri Nitish Kumar, also included conferring of D.Sc. (*Honoris Causa*) on eminent personalities and gold medals to best students in different streams.

In order to play a pivotal role with regard to policy issues in Indian fisheries, the Institute organised local workshops and facilitated interactions between different segments of the sector. Publications in different languages, both in print and electronic media, were accorded greater attention, to achieve effective information dissemination. An increase in the linkages and collaborative programmes was perceptible during the year, with the Institute participating in greater measures in the planning process in the fisheries sector.

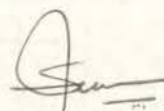
Establishment of new infrastructure facilities like the Museum (*Matsya Darshan*), Extension outlet (*Parichay*), renovation of Guest house, hostel, canteen, health centre, parking place, wet laboratories and aquaculture facilities at the Headquarters; establishment of laboratory facilities at

Institute's centres at Rohtak and Kolkata; upgradation of farm facilities and Institute's centres at Lucknow and Powarkheda and steps for development of the new campus in Mumbai were the aspects of infrastructure development of the Institute.

The efforts brought recognitions to the Institute in the form of awards and fellowships to the members of CIFE family. Organisation of ICAR Sports meet at the Institute was a team effort and several measures to achieve higher efficiency in the system were initiated. Institution of awards for staff members in different categories for acknowledging their contributions was a step in this direction. I take this opportunity to place on record our gratitude to Dr. R.S. Paroda, Secretary, DARE, Govt. of India and Director General, ICAR; Dr. K. Gopakumar, Deputy Director General (Fisheries), ICAR; Dr. S.L. Mehta, Deputy Director General (Education), ICAR; and Dr. A.D. Diwan, Assistant Director General (Marine Fisheries), ICAR, for their guidance and support. The interest and cooperation of several agencies like Department of Biotechnology, Department of Ocean Development, Department of Science and Technology, Council of Scientific and Industrial Research, Central Drug Research Institute, Industrial Toxicological Research Centre, Bhabha Atomic Research Centre, National Institute of Oceanography, National Bank for Agriculture and Rural Development; ICAR Fisheries Research Institutes, Fisheries Colleges of State Agriculture Universities and a host of other organisations and well wishers of this Deemed University in its endeavors are gratefully acknowledged. I

compliment all Scientific, Technical, Administrative and Supporting staff members as well as Students and Research Scholars of CIFE for their contributions to the Institution and the fisheries sector. Thanks are due to the Documentation Cell for its efforts in bringing out this Annual Report.

The Annual Report of CIFE, 2000-2001, is being presented not only as a document of achievement of the year, but also as a forerunner for greater interactions with the planners, administrators, researchers, development officers, farmers, entrepreneurs and students associated with different activities of fisheries sectors in the country and abroad.



Mumbai
30 April, 2001

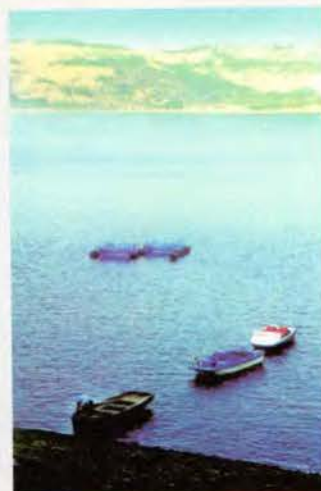
(S. AYYAPPAN)
Director

The academic programmes at Masters' and Doctoral levels, offered by the Institute at its headquarters and centres, as also the Central Marine Fisheries Research Institute, Kochi; the Central Institute of Fisheries Technology, Kochi; and the Central Institute of Freshwater Aquaculture, Bhubaneswar progressed satisfactorily as per schedule. 42 students successfully completed the various M.F.Sc. programmes; under the Ph.D. programmes the degree was awarded to 2 in Mariculture and 1 under Fisheries Resource Management. 41 trainees completed the PG certificate course in Inland Fisheries Development and Administration. 45 students were admitted to the 5 M.F.Sc. programmes while 14 students were registered under the 3 Ph.D. programmes. 30 trainees enrolled for the PG certificate programme at the Kolkata centre.

4 training programmes were conducted under the auspices of the CAS in Fishery Science in which a total of 68 faculty members/scientists from S A U s / r e s e a r c h establishments/universities were trained. 10 guest lectures by external faculty and 2 under the ARS Forum series were organized for the benefit of the students. The CIFE faculty delivered 15 lectures at other Institutes.

Institutional research projects (with 28 constituent subprojects) and 13 externally funded projects were in operation. Notable research achievements include the karyotyping of *Lates calcarifer* and *Chanos chanos*; assessing the pollution status of the Ulhas river at Malegaon region as also the inshore areas of Mumbai; standardization of methods for extraction of nematocysts from venomous jellyfishes; successful culture of *Lates calcarifer* under ambient culture conditions; evaluation of feeding stimulants and flavour attractants in fish feed; characterization of macromolecules associated with virulence of bacterial pathogens of fish; successful culture of seabass, *Lates calcarifer*, etc. 59 dissertations were submitted by the M. F.Sc. students.

13 short-term training programmes of varying durations were conducted and a total of 187 participants were trained. 672 students from primary upto graduate/postgraduate levels visited the Institute and the Fishery Advisory Service catered to 212 technical queries. Other extension activities included the organization of 2 fish farmers' meets, 7 exhibitions and 2 radio talks. A large number of extension publications were released during the year.



The ICAR Award for Team Research was bagged by the Director Dr. S. Ayyappan and his team while Dr. S.C. Mukherjee, Joint Director was conferred with the Fellowship of Nature Conservators. 3 Fellowships were conferred on Dr. R.C. Das Principal Scientist while Dr. K. Pani Prasad and Dr. Parimal Sardar, Scientists bagged awards for their scientific contributions. CIFE was declared the Best Institute among all the Central Government Offices in Mumbai for its contribution for the promotion of Hindi, by Ashirwad, a reputed organization of Mumbai. CIFE athletes won several medals in the ICAR Iner Institutional sports tournament held at CSWRI, Avikanagar. Mrs. Smitha K. was declared as the Best Women Athelete of the tournament.

The Institute released 4 books, 4 extension booklets, 3 magazines, 8 training manuals, and an audio cassette (in Marathi) during the year. The faculty contributed 10 popular articles and 33 scientific papers and presented 131 papers to various seminars, symposia, etc. The Institute also conducted 2 natioinal seminars, 1 summer school, 1 brainstorming session and 1 national symposium. CIFE also conducted the ICAR Interzonal sports tournament in which 35 Institutes participated.

Infrastructure development included the modernization of various laboratories besides the setting up of 'Parichay', an information-cum-service centre and 'Matsya Darshan' the museum. Documentation services and library facilities were further augumented.





Ever since its establishment in 1961, the Central Institute of Fisheries Education (CIFE), Mumbai, has played a pivotal role in post-graduate fisheries education and training. Research and extension endeavours were strengthened with the transfer of administrative control of CIFE from the Government of India to the Indian Council of Agricultural Research (ICAR) in 1979. In due recognition of its yeomen services to the development of Indian fisheries in general and human resource development for the purpose in particular, CIFE was deservedly conferred the coveted status of Deemed University in 1989. This decade-old deemed university has registered remarkable progress since then. Today, CIFE stands tall as a premier *alma mater* in the global fisheries map. The present campus of CIFE is located in a lush green campus of about 2.22 ha at a distance of about half a kilometer from the Versova beach at Mumbai. The Institute's headquarters at Mumbai is housed in a three-storied building with all essential infrastructural facilities like class rooms, laboratories, library, aquarium, etc.

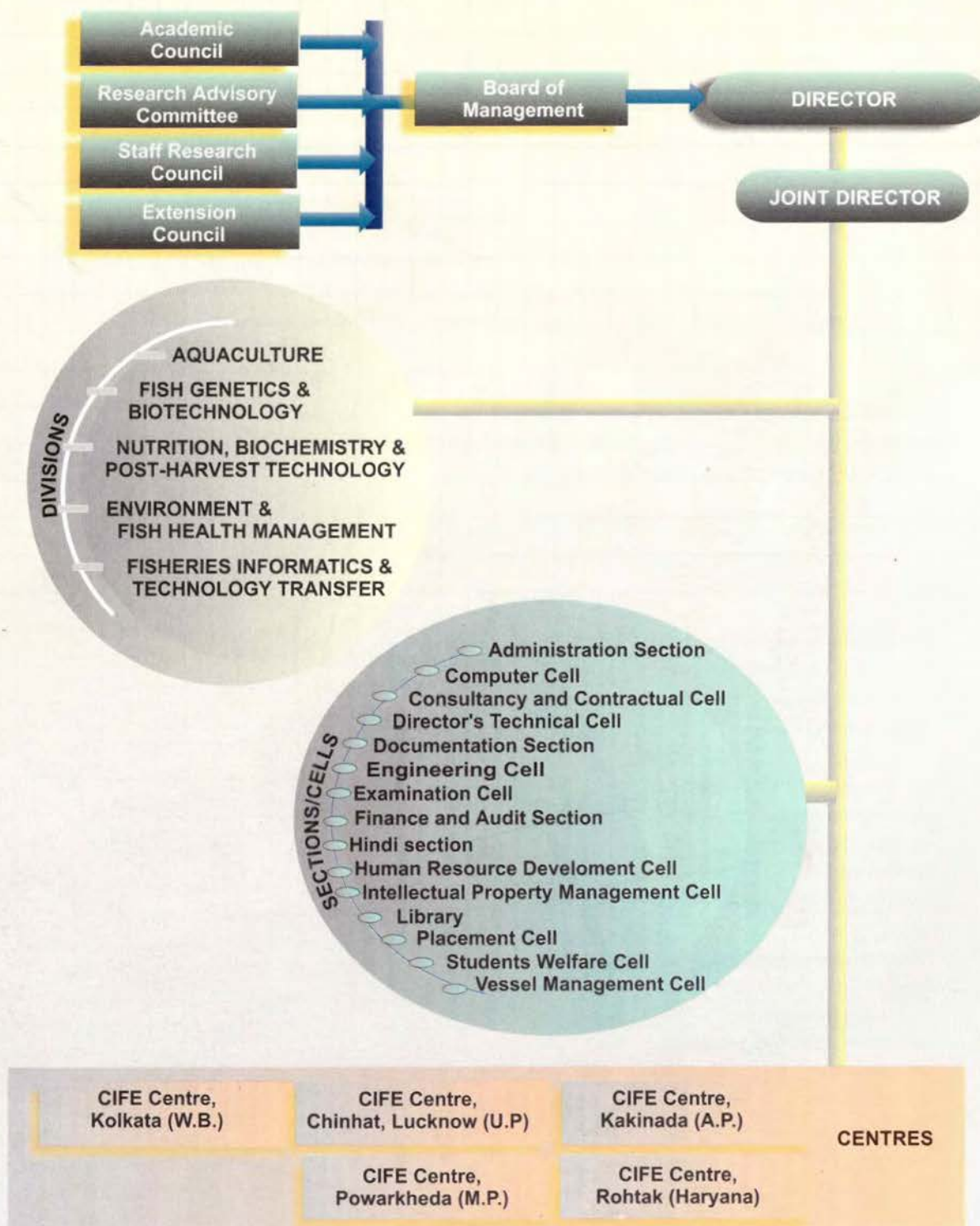
Mandate

- To conduct education and research programmes leading to post-graduate (M.F.Sc.) and doctoral (Ph.D.) degrees in specialised disciplines of fisheries science and technology
- To conduct capsule courses for catering to the refresher training needs of fisheries developmental and extension personnel
- To conduct basic research in frontier areas of fisheries science and technology through institutional and collaborative efforts
- To conduct need-based capsule/vocational training on various technologies related to fisheries and allied disciplines
- To provide institutional support for consultancy and participation in sponsored projects and programmes with other institutions and agencies for fisheries research in inland, coastal and marine (both within EEZ and beyond) sectors



Organization and Management

At the helm of affairs of overall Institutional Management, CIFE has a Board of Management which also forms the highest decision making body at Institute level on all matters. The decisions and recommendations pertaining to academic, research and extension activities of the Institute are made by Academic, Research (RAC & SRC) and Extension Councils, respectively.



Organisational chart of CIFE

Staff position on 31 March, 2001

Categories	Sanctioned	Filled
Research Management Position		
Director	01	01
Joint Director	01	01
Scientific		
Principal Scientists	10	06
Senior Scientists	20	08
Scientists	60	37
Technical	141	141
Administrative	74	71
Supporting	116	100
Total	423	355

Budget (2000-2001) (Figures in Lakhs of Rupees)

Heads	Sanctioned	Expenditure
Non- Plan	938.29	815.83
Plan	488.50	488.34
National Agriculture Technology Project	26.01	11.18
Summer Institute	1.25	1.81
CAS	16.11	12.44
S.D.U	80.01	71.92
AHRD	2.28	1.27
Sports	0.75	0.73
A.P. Cess Schemes	8.69	4.25
JRF & SRF	20.80	15.36

Research achievements

1. Studies on the stock assessment of demersal fishes off Maharashtra

This project includes work on eight species of which four belong to Sciaenidae, two to Nemipteridae and one each to Priacanthidae and Serranidae respectively. Employing FISAT programme the analysis of data on growth, mortality, stock assessment has been carried out. Altogether 23,249 specimens were measured.

Table 1: Annual size range, number of specimen measured and estimated catch in tonnes

S.No.	Species	Length Range (mm)	No. of specimen measured	Total Catch (tons)
1	<i>Jonius macrorhynchus</i>	120-319	3442	701.571
2	<i>Jonieops vogleri</i>	70-349	3785	1253.592
3	<i>Otolithes cuvieri</i>	60-389	4239	949.737
4	<i>Jonieops sina</i>	85-230	2509	193.000
5	<i>Nemipterus mesoprion</i>	50-289	2187	428.134
6	<i>Nemipterus japonicus</i>	70-269	2469	307.699
7	<i>Priacanthus hamrur</i>	110-389	1758	174.558
8	<i>Epinephelus diacanthus</i>	50-519	2860	323.646



Table 2: Mortality, yield and population parameters

SPECIES	Z	M	F	E	U	Y	Y/U	Y/F	MSY
<i>Jonius macrorhynchus</i>	4.84	1.44	3.40	0.70	0.69	702	1017	206	498
<i>Jonieops vogleri</i>	3.66	1.47	2.19	0.59	0.54	1254	2322	572	1046
<i>Otolithes cuvieri</i>	2.24	1.17	1.07	0.47	0.41	950	2317	887	993
<i>Jonieops sina</i>	7.79	1.83	5.96	0.76	0.75	193	258	320	125
<i>Nemipterus japonicus</i>	8.25	1.54	6.71	0.81	0.81	308	380	45	185
<i>Nemipterus mesoprion</i>	4.80	1.70	3.10	0.64	0.63	428	679	138	331
<i>Pericanthus hamrur</i>	2.65	1.31	1.34	0.50	0.46	175	380	130	172
<i>Epinephelus diacanthus</i>	2.46	1.13	1.33	0.54	0.49	324	661	243	298

Z - Total mortality, M - Natural mortality, F - Fishing mortality, E - Exploitation ratio, U - Exploitation rate, Y - Yield, MSY- Maximum Sustainable Yield

2. Studies on population genetics of marine shrimp *Penaeus monodon*

Live specimens of *Penaeus monodon* were obtained from Madgaon, Maharashtra and Kakinada, Andhra Pradesh. Extracts prepared after removal of exoskeleton, head and hepatopancreatic region were subjected to allozyme analysis. Ten enzymes have been studied for all populations. These include ADH, LDH,

MDH, ME, G6PDH, GDH, AAT, SOD, IDH and HK. Significant differences were obtained between the three populations. Larval and adult specimens showed some differences in expression at certain loci. In addition, karyotyping and morphometric studies were also made for the Maharashtra population and the diploid number was found to be 88.



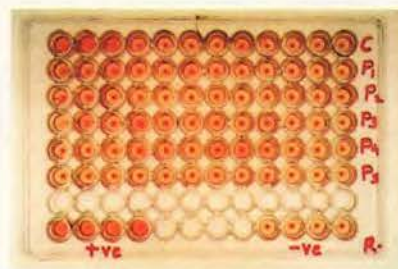
- Studies on the karyomorphology of brackishwater fishes *Lates calcarifer* and *Chanos chanos* in relation to heavy metal pollution



The karyomorphological studies of *Lates calcarifer* were carried out to standardize the practice. The chromosome number was found to be 48 with 2 Metacentric, 6 Submetacentric, 6 Subtelocentric and 34 Acrocentric chromosomes.

- Mapping of biotoxins in marine cnidarians and conidiids and evaluation of their beneficial properties

Alternate freeze-thaw cycle was found to be the most suitable method for



nematocyst extraction from the jelly fishes *Aurelia solida* and *Chiropsalmus buitendijki*; basitrichous isorhiza was the dominant (> 95%) nematocyst type in the former while microbasic mastigophora was dominant (> 97%) in the latter. Both types of nematocysts are important from point of view of envenomation of humans. The crude venom extracted have been assayed for toxicity and partial purification is in progress. The hemolytic activity recorded in the crude venom is of importance towards developing anti-tumor compounds.

Crude venom of the cone-snails *Conus mutabilis* and *C. lentiginosus* exhibited analgesic activity, upto 128 times higher than that of paracetamol. Further purification of the venom is in progress to isolate the active fraction.

- Impact of certain organophosphorus pesticides on body tissue of a common teleost

Ulhas river irrigates a large part of Maharashtra cropping area. An Electricity Project is operational at Bhivpuri where a large amount of fresh water is passed to Rajnala Canal which irrigates about 10,000 acres of paddy fields. It takes around 15 days to saturate the fields and then contaminated water is thrown back in to river at Bhuirwadi. About 4 kilometres from Bhuirwadi, same water is used for Aquaculture, at Malegaon. Sampling was done at Bhivpuri, Baijnath, Bhuirwadi and at Malegaon. Water samples collected from Baijnath, Bhuirwadi and Malegaon contained higher amount of pollutants as compared to those from Bhivpuri. HPLC analysis revealed the presence of phorate and synthetic pyrethroid cypermethrin in the water used for aquaculture at Malegaon. The effect of this polluted water on fish is being studied.

Water samples collected from Vashi creek, Khar creek, Gadi river, Khopoli Fish Hatchery, Khopoli Fish Pond, Safale creek and Kharekuran creek contained lesser amounts of pollutants possibly due to the impact of monsoon. These samples were also subjected to HPLC analysis to detect malathion, O, O - dimethyl phosphodithioate or diethyl succinate. None of the samples collected from Vashi creek, Khar creek, Gadi River, Khopoli Hatchery and Khopoli pond contained Malathion.

- Mapping of the biodiversity along Mumbai coast with special reference to pollution

Coastal water of Mumbai contains more than 10 mg/l of oil. Coastal pollution is caused mainly by hydrocarbons, acids, alkalies, other toxic liquids, chemicals, and biodegradable wastes like sewage and sludge. Industrialisation, human



aggregation, oil spills and slicks, and nutrient enrichment (allochthonous & autochthonous) are the major causes of pollution along the coast. This results in the decrease in diversity and increase in biomass as also promotion of

opportunistic algal species, which suppresses others. The phytoplankton *Thalassiosira subtilis* blooms in severely affected areas, whereas *Skeletonema costatum* is abundant during monsoons. Versova creek, Mahim Bay and Thane Creek are highly polluted. Pelagic fish species accumulate more heavy metals than demersal ones during premonsoon and the trend gets reversed during the other periods.

7. Somatic and gonadal development of brackishwater finfish *Lates calcarifer* under ambient culture conditions off Mumbai coast

Young ones of *Lates calcarifer* were collected in two batches from ponds in Pen and Panvel near Mumbai and acclimatised to ambient culture conditions in freshwater. The experimental culture was undertaken in 15 m³ cement cisterns.

In one set *Tilapia* was provided as feed while in another pelleted feed in semi moist condition was provided. The fishes attained a weight range of 165-220 of after 54 days as compared to 100-150 g at stocking.

8. Studies on DNA fingerprinting and RFLP profiles of commercially important and endangered fish species

Seabass (*Lates calcarifer*), about 1.5 months old, were procured from Kharland Fisheries Research Station, Panvel and acclimatized in cemented

tank consisting Sea water : Tap water in proportion of 3:1, 1:1 and 1:3 (V/V) for one week and finally in 100% tap water. They were fed with both live larval feed available from market and pelleted feed. Pectoral muscle (0.107 g), Gill (0.085 g), kidney (0.017 g), liver (0.021 g) and brain tissue (0.017 g) were dissected and preserved in 0.5 - 1.0 ml cell lysis buffer for DNA isolation later on. A high concentration (8M) urea-containing buffer (TNES-urea i.e. 10 mM Tris -Hcl, pH 7.5, 125 mM NaCl, 10mM EDTA, 1% SDS) was found to be very good for DNA extraction even from fish tissues, which are rich in cellular endonucleases.

Yield of DNA ranged 0.5 - 2.5 g/mg live tissue. Ratio of OD at 260/280 nm was about 1.8 in almost all the samples showing the purity of DNA.

Agarose Gel electrophoresis showed integrity and yield of DNA isolated from liver and gill were good in comparison to that from kidney, brain and muscles. Experiments on Rohu (*Labeo rohita*) and common carp tissues revealed that liver and gill gave better results in these species also.

Restriction Endonuclease Analysis (REA) revealed Seabass liver and gill DNA could be cleaved by Hinf I showing its usefulness for southern hybridization and further cloning studies. Following two primers have been decided and designed for PCR based RFLP study of seabass and *Tor khudree* species:

For Mitochondrial DNA:

5' AAAGATCCTAGGAGTCCG3'
5'CGTTACATAACAGAGAGACC3'

For Satellite DNA:

5'TGAACATGAGCTGTGTGAG3'
5'ACGGACGTGCCAGTGAG3'

A protocol for fish DNA amplification by PCR using random primers was standardized and various experimental conditions were decided.

9. Screening, characterization and evaluation of feeding stimulants and flavour attractants

The feeding stimulant activity of cyperus tuber extracts was established on fingerlings of rohu (*Labeo rohita*). In order to study the effect of feeding stimulants (FS) on growth performance, five diets were prepared by supplementing with cyperus tuber in the concentrations of 0 (control), 0.5, 1, 3 and 5%. Trials were conducted for 60 days and changes in weights, length and metabolic enzyme activities were determined every fifteen days. Increase in mean weight of fish fed on 5% Feeding Stimulants was found to be 1.14 g compared to 0.68 g over control. Among all the diets tested, diet 5% FS was found statistically significant by ANOVA.

The activity of metabolic enzymes viz., Aspartate aminotransferase and Alanine aminotransferase in fish tissue homogenate was estimated. Effect of feeding stimulant in feeding trials was the higher enzymatic activity of Aspartate aminotransferase and Alanine aminotransferase in line with observed higher growth rate. These results revealed that feeding stimulants present in cyperus tuber increased the turnover of amino acids for protein synthesis during growth.

10. Comparative evaluation of extent of impact of agriculture/industry/aquaculture on coastal aquatic ecosystem in selected study areas north and south off Mumbai Coast

The river Savitri receives the impact of agriculture/industry/aquaculture in a stretch of about 60 km. Considering the above importance, six experimental stations (Table no.1) were chosen for the present study.

The planktonic fauna found during the survey of river Savitri and Morwa bay comprise *Skeletonema*, *Chaetoceros*, *Cosmarium*, *Navicula*, *Pleurosigma*, *Pedium*, *Closterium*, *Rhizosolenia*, *Tropidonis*, *Nitzschia*, *Closteridium*, *Oocystis* and *Amphora* among the phytoplankton and Calanoid copepods and *Cyclops*, among the zooplankton.

11. Characterization and comparative evaluation of macromolecules associated with virulence in pathogenic bacteria *Edwardsiella tarda* and *Aeromonas hydrophila*

The CIFA strains of bacteria *A. hydrophila* and *E. tarda* were exalted to increase the pathogenicity. The bacteria were grown in BHI agar, washed three times in PBS, adjusted the CFU to 1×10^6 CFU / ml and injected intraperitoneally (0.5 ml) to clinically healthy *Clarias batrachus* (150 g each). After 2-3 days the bacteria were re-isolated from liver and kidney of the infected fishes and characterized by different biochemical tests. Isolation of outer membrane proteins from cell extracts of *A. hydrophila* was attempted by the following two methods :
(a) By heat and cold shock : The isolated bacteria were washed three times in PBS pH 7.4. and heated to 100°C in boiling waterbath for 2-3 mts

Table 1: Stations chosen

Sl. No.	Name of the Experimental Station	Portion of river	Type of Impact	App. Distance between Exp.Stations by road.
1.	Bhairab	Upstream(Freshwater zone)	No impact	0
2.	Sao	Middle stretch(Freshwater Zone)	Industrial	5
3.	Ambet	Middle stretch(Light brackishwater Zone)	Industrial+ Agriculture	20
4.	Umroli	Middle stretch(BrackishwaterZone)	Agriculture	50
5.	Vaisbi	Downstream (BrackishwaterZone)	Aquaculture	70
6.	Bankot	River mouth (Marine Zone)	Combined impact	80

and immediately cooled to 4°C in ice. This procedure was repeated twice for proper breakage of cells; and (b) By Sonication : The bacteria in PBS were sonicated using Fisher Sonicator for 10 mts.

The antibodies to *A. hydrophila* and *E. tarda* were raised in clinically healthy rabbits by injecting I/V these organisms on 0, 1, 3, 5, 9, 13, 17 and 21 days. Blood was collected 3 days after the last injection, serum separated and titrated for presence of antibodies. The titer was found to be 1 : 256 for *A. hydrophila* and 1 : 612 for *E. tarda*. The immunoglobulins were separated using ammonium sulphate precipitation and IgG separated using DEAE cellulose.

Anti *E. tarda* anti *A. hydrophila* rabbit IgG HRPO conjugates were prepared.

12. Parasitological, microbiological and histopathological evaluation of few selected food fishes off Mumbai coast

A total of six sampling has been done during the period under report. Samples consisted of freshly dead specimens collected from the Versova landing centre, Mumbai. Collected samples were immediately brought to the laboratory in ice for further analysis.

Fish Species	Bacteria isolated
<i>Harpodon nehereus</i>	<i>Vibrio</i> sp. <i>Pseudomonas</i> sp. <i>Staphylococcus</i> sp. <i>Aeromonas</i> sp..
<i>Pampus argenius</i>	<i>Vibrio</i> sp. <i>Staphylococcus</i> sp. <i>Proteus</i> sp.
<i>Johnius dussumieri</i>	<i>Staphylococcus</i> sp. <i>Vibrio</i> sp.
<i>Nemipterus japonicus</i>	<i>Staphylococcus</i> sp. <i>Vibrio</i> sp. <i>Pseudomonas</i> sp.

CIFE Centre, Lucknow

13. Fresh Water Prawn Culture

Seed of the giant freshwater prawn *Macrobrachium rosenbergii* was procured from the Central Institute of Freshwater Aquaculture, Bhubaneswar and stocked in a nursery pond for culture. About 50 g weight gain was achieved individually during 6 months culture period, with a survival of 60%. 34 kg of prawns were harvested.

14. Breeding of Indian Magur

For refinement of *magur* breeding technology a new *magur* hatchery was set up at the centre. *Magur* breeding has been done through induced breeding using the synthetic hormone Ovaprim. The female *magurs* were stripped after 12-14 hours of injection while the male fishes were cut open, and testes macerated to obtain sperm. Fertilized eggs were transferred to *magur* hatchery for development in water flow system and 90% hatching was recorded in 28-30 hours, and yolk sack absorption was completed after a few days. 8,500 nos of *magur* fingerlings were produced. Further work is in progress for refinement of the technology.

CIFE Centre, Kakinada

15. Seabass (*Lates Calcarifer*) Culture

Monoculture: 600 nos of seabass (average length 19.75 mm) procured from Central Institute of Brackishwater Aquaculture, Chennai were acclimatized and stocked in 0.081 ha pond (@ 7400 nos/ha) during the month of September, 2000. The seed was fed with mysids and adult *Artemia*. 95% survival rate was recorded in seed phase. The fry were fed with live mysids and trash fish mixed with ricebran soyacake and shark liver oil @ 3-5% of

body weight in two schedules. After 100 days of culture period 37.9 kg production was achieved with 23% survival. The production rate was 467.9 kg/ha/in 100 days.

Polyculture: 792 nos of Seabass fry, 300 nos of milk fish, and 200 nos of crablets (*Scylla tranquebarica*) were stocked in a 0.2 ha pond. The Seabass were fed with mysids larvae, trashfish, Soybean cake and mineral mixture @ 3% body weight and milkfish were fed with rice bran.

CIFE Centre, Kolkata

16. Chemical and toxicological studies of some pollutants in the sewage fed fisheries of Kolkata

Toxicity of lead (Pb) to common carp fry (30 days) was influenced by hardness of water. Most of the lead was precipitated at hardness above 125 ppm and appeared to be non-toxic as no mortality was observed even in 50 ppm of $Pb(NO_3)_2$ upto 96 hrs. Preliminary results from the experiment of pyrethroids toxicity showed that LD_{50} values for 30 days old common carp fry for decis (a formulated powder containing 2.8% deltamethrin w/w) was less than 5 g/l or 5 ppb.

EXTERNALLY FUNDED PROJECTS

1. Assessment of the stock of shellfish and finfish resources of the northwest sector of Indian EEZ
Funded by : Department of Ocean Development, New Delhi

Growth, mortality, exploitation ratio and maximum sustainable yield were worked out for the stocks of two ribbon fishes viz. *Lepturacanthus savala* and *Eupleurogammus muticus*, which are important from the point of view of export market. It was observed that exploitation ratio of both the stocks is

above 0.5 (*L. savala*, $E = 0.62$ and *E. muticus*, $E = 0.67$), indicating that the stocks are exploited beyond the optimum level and that there is a need for reduction of fishing effort.

2. Resource assessment and biology of the deep sea fishes along the continental slope of the Indian EEZ
Funded by : Department of Ocean Development, New Delhi

During the period under report, data on size composition of commercial landings of *Epinephelus diacanthus*, *Nemipterus japonicus*, *N. mesoprion* and *Priacanthus hamrur* were collected from Sagoon dock / New Ferry Wharf, Mumbai landing centres with 674, 964, 1112 and 793 specimen respectively. The biology of 122 specimens of these four species was also studied.

Research personnel of the project participated in cruise No. 191 of FORV *Sagar Sampada*. 36 bottom trawl hauls were made during this cruise using High Opening Trawl, High Speed Demersal Trawl (Fish version), High Speed Demersal Trawl (Crustacean version) and Expo Model, with catch per unit effort of 60.12, 709.92, 603.51 and 840 kg/hr respectively for these trawls.

Length measurements were recorded on 1454 specimens covering 13 species landed. The biological observations were recorded on the sex ratio, maturity stages, food and feeding of 869 specimen covering 15 species. Many berried specimens of *N. stewartii*, *H. gibbosus*, *H. woodmasoni*, and *P. merguensis* were encountered indicating their breeding period. *Priacanthus hamrur* were in maturing stages, mainly feeding on squids and fish. *N. orientalis* in matured stages as well as in spent conditions were recorded. Fish and prawn were encountered in the gut of almost all the fishes. Most of the fishes were in maturing stages.

3. Laboratory and field culture of edible seaweeds along Maharashtra coast and their product development for health and nutrition

Funded by : Department of Ocean Development, New Delhi

Thirteen stations along the Maharashtra coast were selected for the study viz., (1) Vengurla (2) Malvan (3) Achara (4) Vijaydurg (5) Ratnagiri (6) Harne (7) Srivardhan (8) Murud (9) Thal (10) Uran (11) Colaba (12) Aksa (13) Dahanu. Of the 54 species of seaweeds recorded (see Table) four

were selected for the study viz. *Ulva*, *Enteromorpha*, *Sargassum* and *Porphyra*. Minimum 10 kg of each were collected and shade dried (2-3 days) so as to bring the moisture level to 10-14%. They were then sealed in polythene bags. From these the following edible products were tried at laboratory scale and found satisfactory: (i) Seaweed chatni (wet) and their sandwiches (ii) Dry chatni of seaweeds (iii) Seaweed pickle. Laboratory and field facilities were improved for tissue culture and tank culture. Tissue culture trials for *Ulva* and outdoor culture trials through sporulation for *Enteromorpha* have been initiated.

Availability of seaweed species along Maharashtra Coast-during Premonsoon, monsoon and post monsoon season (2000-2001)

Sr.No.	Premonsoon	Monsoon	Postmonsoon
1.	<i>Chlorophyta</i>	<i>Phaeophyta</i>	<i>Rhodophyta</i>
2.	<i>Ulva lactuca</i>	<i>Padina gymnospora</i>	<i>Hypnea musciformis</i>
3.	<i>U. fasciata</i>	<i>P. tetrastrumatica</i>	<i>H. valentiae</i>
4.	<i>U. rigida</i>	<i>Dictyota bartyesiana</i>	<i>Gelidium</i> sp.
5.	<i>Enteromorpha clathrata</i>	<i>Dilophus fasciola</i>	<i>G. pusillum</i>
6.	<i>E. intestinalis</i>	<i>Sargassum ilicifolium</i>	<i>G. micropterianum</i>
7.	<i>E. tubulosa</i>	<i>Sargassum</i> spp.	<i>Gracilaria</i> sp.
8.	<i>Enteromorpha</i> sp.	<i>S. swartzii</i>	<i>G. verrucosa</i>
9.	<i>Caulerpa peltata</i>	<i>S. tenerimum</i>	<i>G. corticata</i>
10.	<i>C. racemosa</i>	<i>S. cinereum</i>	<i>Centroceras clavulatum</i>
11.	<i>C. verticillata</i>		<i>Ceramium</i> sp.
12.	<i>C. sertularioides</i>	<i>Caloglossa leporeurii</i>	
13.	<i>Bryopsis plumosa</i>		<i>Catnella repens</i>
14.	<i>Cladophora</i> sp.	<i>-Polysiphonia</i> sp.	
15.	<i>C. fascicularis</i>		<i>Rhodomenia palmata</i>
16.	<i>Ernodesmis verticillata</i>		<i>Acanthophora spicifera</i>
17.	<i>Chaetomorpha media</i>		<i>Soliera robusta</i>
18.	<i>C. linum</i>		<i>Caulocantus</i> sp.
19.	<i>Valoniopsis</i> sp.		<i>Melobesia</i> sp.
20.	<i>Struvea anastomosans</i>		<i>Laurencia papillosa</i>
21.			<i>Ahnfeltia plicata</i>
22.			<i>Jania rubens</i>
23.			<i>J. adherens</i>
24.			<i>Amphiroa fragillissima</i>
25.			<i>Gratelopia filicina</i>
26.			<i>Chondria</i> sp.
27.			<i>Porphyra vietnamensis</i>
Total	20	12	25

4. Standardisation of techniques of commercial seed production of freshwater giant prawn using inland saline water
Funded by : AP Cess Fund, ICAR, New Delhi

This project is being carried out at CIFE Centre at Rohtak. Post larvae (PL-15) were reared in a pond under polyhouse with 56% survival achieving a maximum weight of 110 g and length of 22 cm in a year's time. Prawns achieved maturity under agro-climatic conditions of semi-arid region. Gravid females successfully released hatchlings in inland saline water. Larvae of *M. rosenbergii* were reared in inland underground saline water of required salinity upto 8th stage and further work is in progress.

5. Fish production using brackishwater in arid ecosystem
Funded by : (National Agriculture Technological Project, New Delhi)

This project, in collaboration with Central Institute of Brackishwater Aquaculture, Chennai, Hisar Agricultural University, Hisar and Gujarat Agricultural University, Okha, is being carried out at the CIFE Centre at Rohtak. A preliminary survey was conducted to select the suitable sites for stocking the seed of commercially important varieties of brackishwater fin and shell fish in semi-arid and arid regions. *Peneaus monodon*, *Mugil cephalus*, *Etroplus suratensis*, *Lates calcarifer* and *Chanos chanos* can survive in inland underground saline water (IUSW) of semi-arid regions. Fingerlings of *Chanos chanos* were stoked in a pond filled with IUSW of 23-26 ppt. Survival and growth are being monitored.

6. Development of Immuno-diagnostic kits for bacterial diseases of fishes: Funded by the Department of Biotechnology, New Delhi

The following kits were developed:

1. ELISA, Dot-ELISA and latex agglutination kits for *Pseudomonas fluorescens*
2. ELISA, Dot-ELISA and latex agglutination kits for *Aeromonas hydrophila*
3. ELISA, Dot-ELISA and latex agglutination kits for *Vibrio alginolyticus*
4. ELISA, Dot-ELISA and latex agglutination kits for *Edwardsiella tarda*

These kits are ready for commercialization.

Education achievements

5.1 Fifth Convocation of CIFE

The Fifth Convocation of Central Institute of Fisheries Education was held on 15th December, 2000 at the Institute's premises. Hon'ble Union Minister of Agriculture and President of the Indian Council of Agricultural Research, Shri Nitish Kumar was the Chief Guest and Dr. K. Gopakumar, Deputy Director General (Fisheries) ICAR was the guest of Honour. Other distinguished guests included Dr.S.A.H.Abidi, Member, ASRB, New Delhi, Prof. K.H. Alikunhi, Prof. Hiralal Chaudhuri, Padmashri Prof. N.Balakrishnan Nair, Dr. S.L.Mehta, Dr. S.N.Dwivedi, and Dr.S.D.Tripathi.

Shri Nitish Kumar, Hon'ble Union Minister of Agriculture in his Convocation address highlighted the salient features of the first ever National Agriculture Policy (NAP) which spells out the direction in which the Government and the country have to proceed for development of sustainable agriculture and the new

major schemes which the Ministry of Agriculture proposes to take up for supporting the establishment of network of Agriclincs and Agri-Business centres in the country by agriculture graduates. He mentioned with great pride that today India stands third in the world with regard to total fish production and second in aquaculture production. He lauded the efforts of CIFE in contributing immensely to the training of fisheries personnel all over the country. He expressed his pleasure on CIFE's approach of conducting educational programmes in different parts of the country in collaboration with other ICAR Institutes. He appealed to the students to be worthy citizens and to be committed and dedicated towards the society and the nation



Dr. S. Ayyappan, Director of CIFE delivered the welcome address besides presenting the progress report of the Institute. The D.Sc degree (*Honoris Causa*) were conferred on Prof. Kullil Hameed Alikunhi, Padmashri Prof. Narayana Balakrishnan Nair and Dr. Shanti Lal Mehta by Hon'ble Union Agriculture Minister, Shri Nitish Kumar. This Honorary degree of D.Sc. was conferred for the first time in the history of this University. Shri Nitish Kumar presented Dr. Hiralal Chaudhuri Gold medals and Dr. C.V.Kulkarni Gold medals to the most successful students in each of the academic programmes. Degrees were conferred upon a total of 123 successful candidates, 48 in person and 75 *in absentia*. Shri Nitish Kumar presented the Samman Patra (Best Farmer Award) to Shri Vasantha Kumar and Shri Manmohan Agarwal, progressive fish farmers from Andhra

Pradesh and Madhya Pradesh respectively. The Chief Guest also conferred the Honorary Fellowships of Indian Fisheries Association on Prof. Hiralal Chaudhuri, Dr. K.Gopakumar, Dr. S.A.H Abidi and Dr. S.D.Tripathi. On this occasion the Hon'ble Union Minister of Agriculture released the following CIFE publications:

1. *Bhartiya Matsyiki-Indian Fisheries* (Bilingual book)
2. *Jalchari- Annual Hindi Magazine*.
3. Institute's information bulletin
4. CIFE Alumni 2000 (D.F.Sc)

The Convocation ended with a Vote of Thanks by Dr. S.C. Mukherjee, Dean/Joint Director.



5.2 Academic Programmes

The details of enrolments and results declared pertaining to the various academic programmes offered by the Institute for the year 2000-2001 are as follows:

Results

Name of the programme	Year	Number of successful candidates
M.F.Sc. (Fisheries Resources Management)	1998-2000	12
M.F.Sc (Inland Aquaculture)	1998-2000	14
M.F.Sc (Mariculture)	1998-2000	7
M.F.Sc (Freshwater Aquaculture)	1998-2000	4
M.F.Sc (Post-harvest Technology)	1998-2000	5
P.G. Certificate in Inland Fisheries Development & Administration	1999-2000	41
Total		83

Enrolments

Name of the programme	Number of students admitted
M.F.Sc. (Fisheries Resources Management)	14
M.F.Sc (Inland Aquaculture)	11
M.F.Sc (Mariculture)	10
M.F.Sc (Freshwater Aquaculture)	05
M.F.Sc (Post-harvest Technology)	05
Ph.D. (Fisheries Resources Management)	05
Ph.D. (Inland Aquaculture)	06
Ph.D. (Mariculture)	03
P.G. Certificate in Inland Fisheries Development & Administration	30
Total	89

5.3 Guest lectures

Name	Topic	Date
Dr. N.R. Menon Director Cochin University of Science and Technology, Kochi	Hydrobiology of Cochin Backwater Systems	July 22 ,2000
Mr. Zeev Kulikovsky and Mr. Mordehay Feldlite (MAHSHAV) Israeli Experts	Aquaculture Development in Israel	September 11, 2000
Dr. Lalji Singh Director Center for Cellular and Molecular Biology, Hyderabad	Human Genome Project	September 29, 2000
Dr. Namish R. Desai , MBBS, Mumbai	Health and Healing	October 3, 2000
Mr. Amit Chavan Student of Ruia College and Member of The Bombay Natural History Society	Snakes	October 3, 2000
Dr.G.G. Wankhede Tata Institute of Social Science	Scientific Presentation	October 4, 2000
Dr. Jagannadham Challa Principal Scientist NAARM Hyderabad	Human Resource Development in Agricultural Research	November 17, 2000
Prof. H.S. Krishnaswami Head, Dept. of Mathematics B. S and H College University of Agricultural Sciences Bangalore	Application of Mathematics (Algebra) in Biology	November 29, 2000
Mr. Joseph Scaria M/S Elcom Marine Mumbai	Application of Simulators in Marine Fisheries Education and Training	November 29, 2000
Dr. Samir Bhattacharya Director Indian Institute of Chemical Biology Kolkata	Fish Insulin	January 18, 2001



Education achievements

5.4 CAS training programmes

Advances in Immunopathological
Techniques in Fish and Shellfish Health
Management

Jan., 15, 2001 to Feb., 5, 2001

No. of Participants: 15

Quality Management in Export of
Seafood Products

Dec., 19, 2000 to Jan., 8, 2001

No. of Participants: 20

Computer Applications in Fisheries

Nov., 16, 2000 - Dec., 6, 2000

No. of Participants: 20

Brood Stock Management and
Genetic Selection in Fish Seed
Production

Feb., 1 - Mar., 4, 2001

No. of Participants: 13



Dr. S.C. Mukherjee

Director Incharge
 "Fish Wealth Management and Aquatic Microbiology"
 CIFA, Bhubaneswar
 April 11-15, 2000 and
 April 27 May 1, 2000

Mr.K. Venkateshvaran

Scientist(SS)
 "Food Borne Marine Biotoxins and their human health implications" (Lecture and related practical)
 ITRC, Lucknow
 May 18-19, 2000

Dr. M. B. Ifthekar

Senior Scientist
 "Mariculture"
 LBS College of Advance Maritime Studies and Research, Mumbai
 September 12 & 19, October 3 & 10 and October 24, 2000

Mr. A.K. Reddy

Technical Officer
 "Freshwater Prawn Culture"
 Farmers' Meet at Maharogi Sewa Samiti, Chandrapur
 October 29, 2000

Mr.A.K. Reddy

Technical Officer
 "Freshwater Prawn Culture"
 Farmers' Meet at CIFE,
 Rohtak Centre
 November 11, 2000

Dr. G. Venugopal

Senior Scientist
 "Advances in Aquaculture"
 NABARD, Kakinada, A.P.
 December 15, 2000

Mr. A.K. Reddy

Technical Officer
 "New Candidate Species for Aquaculture and Environment"
 KGRL College, Bhimavaram, Andhra Pradesh
 December 28, 2000

Dr. S. Ayyappan

Director
 "Sustained Fisheries for Alleviating Hunger and Poverty in India" and "Fisheries Education Need for Greater Emphasis"
 Indian Science Congress, New Delhi
 January 3-7, 2001

Dr. G. Venugopal

Senior Scientist
 "Techniques of Scampi Culture"
 Godavari Grameena Bank,
 Rajahamundry, Kakinada
 January 5, 2001

Mr.K. Venkateshvaran

Scientist(SS)
 "Medical and Biotechnological Aspects of Marine Macroalgal Polysaccharides"
 D.G. Ruparel College, Mahim
 January 8, 2001

Dr. W.S. Lakra

Principal Scientist
 "Recent Advances in Fish Genetics and Biotechnology"
 D.G. Ruparel College, Mahim
 January 8, 2001

Mr. P.K.Das

Senior Hindi Translator
 "Hindi Translation"
 SNDT Women University, Mumbai
 January 31, 2001

Dr. Archana Sinha

Senior Scientist
 "Nutrition and Fish Health"
 University of Jammu, Jammu
 March 3, 2001

Ms. Asha. T. Landge

Technical Officer
 "Freshwater Fish Farming"
 Fisheries farmers one day Conference of Fisheries Co-operative Society of Maharashtra State,
 Dr.M.G.Parulekar High School, Vasai
 March 4, 2001

Mr.K. Venkateshvaran

Scientist (SS)
 "Drugs from the Sea"
 Institute of Science
 Mumbai
 March 22, 2001

5.6 ARS Forum Lecture Series

Under the Agricultural Research Service Scientist Forum Lecture series the following lectures were delivered during the period under report

1. "Scombroid Fish Poisoning" by Dr. B.B.Nayak, Scientist, CIFE on May 20, 2000.
2. "Water Quality Parameters with Special Reference to Pearl Culture" by Dr. (Mrs.) Kiran Dube, Senior Scientist, CIFE on May 20, 2000.

5.7 Students' Dissertations M.F.Sc., IAC (1998-2000)

Topic : Evaluation of critical control point with respect to vibrios in freezing of shrimps (PD)

Student : Mr. K. Kabilan
Guide : Dr. B. B. Nayak

Topic : Responses of *Labeo rohita* to dietary *Lathyrus sativus*

Student : Mr. Abhijeet V. Barse
Guide : Dr. Sanjay Jadhav

Topic : Biochemical and Pharmacological aspects of carp bile

Student : Mr. V. Anbalagan
Guide : Mr. K. Venkateshvaran

Topic : Development of cell culture (primary culture) from freshwater prawn *Macrobrachium rosenbergii* for cytogenetic studies

Student : Mr. Vishal Saxena
Guide : Dr. W. S. Lakra

Topic : Antibiotic resistance pattern in bacteria isolated from shrimp in culture ponds

Student : Mr. B. Kiran
Guide : Dr. K. Paniprasad

Topic : Parasitic diseases of brackishwater fishes of

Muttukkadu lagoon of Chennai coast

Student : Mr. G. Rajendran
Guide : Dr. K. V. Rajendran

Topic : Knowledge level and extent of adoption of composite fish culture practices by aquaculturist in Sonitpur district Assam

Student : Mr. Pabitra Kumar Talukdar
Guide : Dr. B. Sontakki

Topic : Extraction of heparin from marine molluscs

Student : Mr. G. Solanki Haresh Kumar
Guide : Mr. K. Venkateshvaran

Topic : Experimental susceptibility of freshwater prawn, *Macrobrachium rosenbergii* to white spot virus (WSV)

Student : Mr. B. Pramod Kiran
Guide : Dr. K. V. Rajendran

Topic : Microwave cooking of fishery products

Student : Mr. Balkrishna Ramchandra Supal
Guide : Dr. S. Basu

Topic : Estimation of certain heavy metals in marine waters off Mumbai coast

Student : Mr. B. Gautam Raj
Guide : Dr. K. Paniprasad

Topic : Biology, age and growth of *Loligo duvaucelii* off Mumbai waters

Student : Ms. Nirmala Subhash Karnik
Guide : Dr. S. K. Chakraborty

Topic : Development of cell line from lymphoid organ of *Penaeus monodon*

Student : Mr. Salluri Bhaskara Rao
Guide : Dr. K. Paniprasad

Topic : DOT BLOT assay of YHV/WSV in shrimp

Student : Ms. P. Srikala
Guide : Dr. K. Paniprasad

Topic : Hydrobiological studies with special reference to benthos in sub-Shivalik Mansar lake in Jammu

Student : Mr. T. Angchook

Guide : Dr. M.P.S.Kohli

M.F.Sc., FRM (1998-2000)

Topic : Studies on preparation of fish sausage and its storage characteristics

Student : Mr. Shashank Sharad Churi

Guide : Dr. S. Basu

Topic : Studies on enhancement of shelf life of fish preserved in ice containing permitted bactericide chemicals

Student : Mr. Mahadev Rama Kokane

Guide : Dr. S. Basu

Topic : Biochemical studies on the efficacy of antistress formulation to combat cumulative stress effect on Rohu fingerlings (*L. rohita*, Ham.)

Student : Mr. Manash Choudhary

Guide : Dr. A. K. Pal

Topic : Combination process using Gamma radiation and other treatments for fish preservation

Student : Mr. K. Jeevanandam

Guide : Dr. B. B. Nayak

Topic : Quality assessment of frozen fish by enzyme assay

Student : Mr. Upendra Pratap Singh

Guide : Dr. S. D. Singh

Topic : Cytogenetic profile of selected marine teleosts from north-west coast of India

Student : Mr. Akshay Kumar Singh

Guide : Dr. W. S. Lakra

Topic : Comparison of TMAO reducing and sulphur reducing abilities of spoilage bacteria in mackerel

Student : Mr. Abhash Chandra Mandal

Guide : Dr. B. B. Nayak

Topic : Effect of aflatoxin on CMI response in fishes

Student : Ms. K. Madhavi

Guide : Dr. K. Paniprasad

Topic : Determination of antibiotic residues in shrimps

Student : Ms. N. Jesintha

Guide : Dr. K. Paniprasad

Topic : Development of cell-lines from *M. rosenbergii* lymphoid organ

Student : Mr. M. Rajitha

Guide : Dr. K. Paniprasad

Topic : Role of probiotic on larval rearing of giant freshwater prawn *Macrobrachium rosenbergii*

Student : Mr. Khairnar Sachin Dharma

Guide : Dr. C. S. Purushothaman

Topic : Current trends of fish production and hydrobiological parameters in the middle stretches of river Ganga

Student : Mr. P. K. Paswan

Guide : Dr. M. P. S. Kohli

Topic : Impact of Ganga Action Plan and current status of fish production at Patna stretch of Ganga

Student : Mr. U. K. Ranjan

Guide : Dr. M. P. S. Kohli

Topic : Soil and water quality studies in some shrimp farms.

Student : Mr. K. S. Singh

Guide : Dr. M. P. S. Kohli

M.F.Sc. (Freshwater Aquaculture) 1998-2000

Title : *In vitro* hatching of
Macrobrachium rosenbergii
eggs

Student : Mr. Anil Kumar Swain
Guide : Dr. K.J. Rao

Title : Studies on certain nuclear
material for pearl formation
in *Lamellidens marginalis*

Student : Mr. S. Sanjiva Rao
Guide : Dr. K. Janaki Ram

Title : Studies on species
identification through RAPD-
PCR in Indian major carps

Student : Mr. Bharat M. Yadav
Guide : Dr. H. K. Barman

Title : Biochemical Pathological
and Immunological aspects
of stress induced condition in
fresh water prawn
(*Macrobrachium*
malcolmsonii)

Student : Mr. Satyanarayan Sethi
Guide : Dr. S. C. Mukherjee

M.F.Sc. (Mariculture) 1998-2000

Title : Levels of enrichment of the
probiotic yeast
Saccharomyces boulardii in
Artemia Nauplii.

Student : Mr. Sushanta Kumar Patra
Guide : Dr.K. Sunil Kumar
Mohamed

Title : Structure of pineal gland and
experimental studies on
hormone melatonin in the
mullet *Liza parsia*

Student : Mr. Udaya Sankar Sethi
Guide : Dr. L. Krishnan

Title : Inflammatory response in
Etroplus suratensis Exposed
to Sublethal level of
Organophosphorus
Pesticide

Student : Ms. Maya R.J.
Guide : Dr. K. C. George

Title : Studies on Bionomics and
Pathogenicity of Luminescent
Bacteria

Student : Mr. John Josephraj
Guide : Dr. V. Chandrika

Title : Evaluation of Phosphorus
sources in the compounded
diets of *Penaeus indicus*

Student : Mr. Biswamitra Patro
Guide : Dr. R. Paulraj

Title : Perception of Farmers about
Different types of shrimp
feeds

Student : Mr. Paul Pandi
Guide : Mrs. Sheela Immanuel

Title : Intraspecific and Interspecific
studies in *Nemipterus* using
truss network

Student : Mr. Juliet Joseph
Guide : Dr. P. Jayasankar

Title : Annual reproductive cycle of
sea cucumber *Holothuria*
(*Halodeima*) *Atra jaeger*
(*Holothuroidea* :
Aspidochirota) at Tuticorin,
Southeast coast of India

Student : Mr. Ram Mohan M. K.
Guide : Dr. D. B. James

Title : Studies on certain nuclear
material for pearl formation
in *Lamellidens marginalis*

Student : Mr. S. Sanjiva Rao
Guide : Dr. K. Janaki Ram

M.F.Sc. (Post Harvest Technology) 1998-2000

Title : Bacterial quality of shrimp
processed in factories for
export to European Union.

Student : Mr. P. Yesudhasan
Guide : Dr. T. S. G. Iyer

Title : Comparative study on the Biochemical composition, pollution profile and spoilage patterns of farmed and wild shrimp.

Student : Ms. Biny Kurian Joseph
Guide : Dr.K. Devadasan

Title : Studies on techniques to remove toxic residues from process water.

Student : Mr.Sudhansu Sekhar Das
Guide : Dr.M.K.Mukundan

Title : Changes in SH group and protein during pre-processing and processing of milkfish (*Chanos chanos*)

Student : Mr.S. Thippeswamy
Guide : Dr.Jose Joseph

Title : Microbiology of fish feeds of commerce and in-vitro study of the changes in their microflora in aquaculture ponds

Student : Mr. Ramalinga
Guide : Dr. P.K. Surendran

P.G. Certificate Course in Inland Fisheries Development and Administration (1999-2000)

Title : Methods of sewage treatment and their effect on physico chemical parameters.

Student : Mr.Fayaz Ahmad Dar
: Mr.Mohd. Sideeq Choh
: Mr.Balvir Singh Godara
Guide : Dr.Subheudu Datta

Title : Status of Aquafeed Manufacturing Industry in West Bengal and Jammu and Kashmir

Student : Mr. Mohmmad Shafi Wani,
Mr. Dipankar Saha,
Mr. Satpal Sachdeva
Guide : Dr. Parimal Sardar

Title : Bioassay studies of Triazophos Pesticide on *Clarias batrachus* (Linn.)

Student : Mr. Javaid Hussan,
Mr. Pawan Pal Sharma,
Mr. Amarjeet Singh,
Mr. Bodh Raj
Guide : Dr. U. K. Maheswari

Title : Techniques of Breeding of Indian major carps and Hatcheries Management in India with special reference to Assam and West Bengal

Student : Mr. Poziruddin Ahmed,
Mr. Rafique Saikia,
Mr. Santi Kr. Naskar
Guide : Mr. B. N. Tiwari

Title : Fish and Fisheries of Kyrdemkulai Reservoir

Student : Mr. D.B.L. Kharwanlang,
Mr. P.S. Tariang,
Mr. S. Challam
Guide : Dr. (Mrs.) Archana Sinha

Title : Status of Prawn Processing Industry in West Bengal

Student : Mr. Kamal Hossain,
Mr.Somen Sil,
Mr. Shyam Sundar Das
Guide : Dr. Parimal Sardar

Title : Culture of Freshwater Prawn with Culturable Fishes

Student : Ms. Kamala Kanta Murmu,
Mr. Ajay Singh, Mr. E. Laloo
Guide : Mr. P.S. Pandey

Title : Study of Toxicity of Triazophos on the Fingerings of *Heteropneustes fossilis*

Student : Mr. F. A. Fayaz,
Mr. Surender Mohan,
Mr. R.K. Khajuria,
Mr. Dawa Norboo
Guide : Dr. U.K. Maheswari

Title : Scope of Freshwater Pearl culture in West Bengal

Student : Mr. Sudhir Kumar Saha,
Mr. Chandan Kumar Bhaumik,
Mr. Parimal Karjee

Guide : Mr. P. S. Pandey

Title : Indigenous Fishing Crafts and Gears used to Exploit water Resource in Assam with Particular Emphasis on Cachar District.

Student : Mr. Biswadev Acharyya,
Mr. Parikshit Barman,
Mr. Ananda Ram Kalita

Guide : Mr. B.N. Tiwari

Title : Socio-Economic Status of The Fish farmers of the Amritsar District in Punjab

Student : Mr. Pardeep K. Singla,
Mr. H.S. Bawa, Mr.
Igetacha

Guide : Dr. (Mrs.) Archana Sinha

Title : Hydrobiology, Fish and Fisheries of Anchar Lake

Student : Mr. Tasadud Hussain Shah,
Mr. Ghulam Jeelani Pandit,
Mr. Tsewang Dolma

Guide : Dr. Subhendu Datta

5.8 Ph.D. Thesis awarded

Topic : Impact of Shrimp farming on the environment in Saphale region of Maharashtra

Student : Mr. Munilkumar Sukham
(1996-1999)

Guide : Dr. C.S.Purushothaman

Topic : Ichthyocrinotoxicity of marine catfishes of Mumbai Coast

Student : Mr. Ashutosh Deo (1995-1998)

Guide : Dr. M. Dev raj

Topic : Studies on Ecology, Chemical constituent and culture of marine microalgae of Minicoy Island Lakshdweep

Student : Mr. Haneefa Koyar (1996-1999)

Guide : Dr. C.P. Gopinath

Extension achievements

6.1 Short term Training programmes

During the year 13 short term training programmes were conducted in which a total of 187 persons were trained

<i>Name of the course</i>	<i>Duration</i>	<i>Venue</i>	<i>Participants</i>
Fish seed and fish products in seasonal and perennial ponds	Aug., 17-26, 2000	CIFE, Mumbai	09
Hatchery and grow-out aspects of freshwater fisheries	Mar., 1- Aug., 31, 2000	CIFE Centre, Lucknow	18
Fish Seed Production and Raising Techniques (Specially for Adivasis)	Aug., 22 - 31, 2000	CIFE Centre, Powerkheda	16
Fish farm Management	Aug., 25-Sept., 8, 2000	CIFE Centre, Powarkheda	22
Hatchery and grow-out aspects of freshwater fishes	Sept., 1, 2000- Feb., 29, 2001	CIFE Centre, Lucknow	21
Management of Giant freshwater Prawn Hatchery	Oct., 16-25, 2000	CIFE, Mumbai	19
Brackishwater finfish and shellfish culture	Nov., 15-22, 2000	CIFE Centre, Kakinada	17
Soil and Water Quality Management for Aquaculture (Specially for the persons from Maharogi Seva Samiti, Chandrapur District)	Nov., 21-30, 2000	CIFE Mumbai	03
Fresh water prawn and fish culture	Dec., 13-20, 2000	CIFE Centre Kakinada	16
Advances in Immuno-pathological Techniques in Fish and Shellfish Health Management	Jan., 15- February 5, 2001	CIFE, Mumbai	15
Sea food products for fisherwomen	Jan., 22-27, 2000	CIFE Mumbai	18
Broodstock Management and Genetic Selection in Fish Seed Production	Mar., 12- 4, 2001	CIFE Mumbai	13
Total			187

6.2 Fisheries Awareness Programme / Visit coordination

672 students from all over India visited the Institute as a part of their study tour during the period. The composition of the groups was as follows.

Primary/secondary students	050
Under graduates	386
Post graduates	072
B.F.Sc. students	126
CIFE Centres	038
Total	672

They were appraised of the on going activities of the Institute and were taken around various Divisions / Laboratories, landing centres landing centres, Tarapur aquarium and processing plants in Mumbai. Film shows were also arranged for them. Lectures of different scientists were also organized as per the demands of the students.

6.3 Fisheries Advisory Service

212 queries on fish farming, processing, pearl culture, training programmes, etc. were answered during the year.

6.4 Fish Farmers' Meets

Farmers' meet at CIFE Rohtak

A one-day Fish Farmers Meet was organised at CIFE Rohtak Centre, Lahli, Distt. Rohtak, Haryana, on November 11, 2000 in collaboration with Department of Fisheries, Govt. of Haryana coinciding with their celebration of 14th Annual Fish Farmers' Day. Dr.K.Gopakumar, Deputy Director General (Fisheries), ICAR, New Delhi presided over the meet. Hon'ble State Minister for Animal Husbandry, Dairy Development Fisheries & Wakf, Ch.Mohd. Ilyas, and Smt. Asha Sharma, Financial Commissioner & Secretary, Department of Fisheries Govt. of Haryana were the Chief Guests at this occasion.

The basic objective of the Fish Farmers' Meet was to help the fish farmers of the State in their day-to-day problems of pond water management, feed and nutrition, diseases and also to make them aware of the latest developments in aquaculture and methods to enhance fish production. Subject matter specialists were invited from various ICAR Institutes, Universities, KVK's, NABARD, insurance sector and also Development officers from State Fisheries Departments. More than 300 fish farmers actively engaged in aquaculture in all the nineteen districts of Haryana participated in this meet.

Hon'ble State Minister for Animal Husbandry, Dairy Development, Fisheries & Wakf, Ch. Mohd. Ilyas, assured the farmers of the best possible help to fish farmers of the state especially supply of irrigation water at reduced rates. Three best farmers were awarded cash prize of Rs.1000/-, Rs.750/- and Rs.500/-. A running trophy was also given to the Fisheries Development Officer of the district to which the best fish farmer belongs. An exhibition was also organised on this occasion by the CIFE for the benefit of fish farmers.



Farmers' Meet at Kakinada

A Farmers' Meet was organised at CIFE Centre, Kakinada on December 13, 2000. About 25 farmers and members from Fishermen Co-operatives participated in the meet.

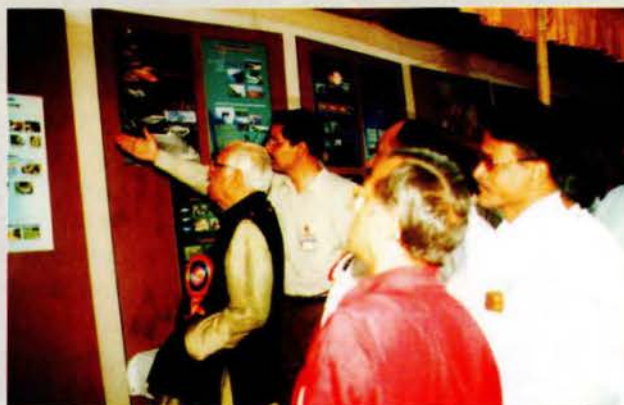
6.5 Radio talks

Radio talks on aspects of brackishwater farming in Telugu language were delivered by Shri K.M. Murali Mohan, T-5 and Shri P. Srinivasa Rao, T-5 Kakinada Centre at All India Radio, Visakhapatnam.

6.6 Exhibition

CIFE organized seven exhibitions in different parts of the country.

August 10-11, 2000	Exhibition on Fish and Environment at CIFE Centre, Lucknow
September 21-23, 2000	Exhibition on the occasion of First Indian Fisheries Science Congress, Chandigarh
October 12-15, 2000	Exhibition at Agri-Fare 2000, Ahmedabad
November 29 - December 2, 2000	Exhibition on the occasion of Seminar on Sustainable Fisheries and Aquaculture, Chennai
January 3-7, 2001	Exhibition on the occasion of Indian Science Congress, New Delhi
February 24 March 1, 2001	Exhibition at Krishi Expo 2001, New Delhi
March 4, 2001	Exhibition at Fisheries Co-operative Society organized by Sagarputra, Vasai, Maharashtra



Honours and awards

Fellowships conferred



Dr. S.C. Mukherjee, Director Incharge, CIFE, was conferred with the Fellowship of Nature Conservators on June 8, 2000 by the Nature Conservators of India, Muzaffarnagar at Himachal Pradesh Agricultural University, Palampur H.P. the fellowship was presented by Dr. R.S. Paroda, Director General, ICAR and Secretary, DARE, Govt. of India.

Dr. Radha C. Das, Principal Scientist was awarded Fellowships from the following Societies during the year 2000-2001 for his outstanding contribution in the field of Fisheries:-

- i) FNC-Fellowship of the Nature Conservators, Muzaffarnagar (UP), India on April 20, 2000.
- ii) FISEP-Fellowship of the International Society for Environmental Protection Science Academy, Gorakhpur on August 29, 2000.
- iii) FSB-Fellowship of the Society of the Biosciences, Muzaffarnagar on November 5, 2000.
- iv) FBRS-Fellowship of the Bioved Research Society, Allahabad on February 3, 2001.

ICAR award for outstanding multi-disciplinary team research in agriculture and allied sciences

The ICAR Award for Team Research for 1997-98 was given to Dr. S. Ayyappan and his five associates, viz. Dr. C.S. Purushothaman, Shri P.K. Aravindakshan, Dr. J.K. Jena, Dr. P.P. Chakraborty and Dr. M.L. Bhowmick for their significant contributions to Fisheries.

Dr. Ayyappan and his team have been successful in finding out a viable alternative for wastewater treatment through biological means with nutrient resource recovery in terms of plant and fish biomass, as technology for adoption in the country. A specific model of sewage treatment through



aquaculture (ASTP), considering various treatment parameters, engineering details and public health concerns, was developed on a field-scale for the first time in the country. Data on growth and nutrient removal efficiencies of different duckweeds, and variation patterns for bacterial population at different stages of treatment for design of treatment system in different agro-climatic conditions were generated. This comprehensive

wastewater treatment system is approved and accepted by the National River Conservation Directorate, Ministry of Environment and Forests, Government of India, and different State Public Health Engineering Departments.

Utilization of domestic sewage for fish culture was demonstrated as an effective method of disposal of treated effluents. This process can recover 39% of the operational costs from the sale of fish produce. The system is quite suitable for towns with a population of 1-2 lakhs.

The above research work was carried out at the Central Institute of Freshwater Aquaculture, Bhubaneswar.



Dr. K.K. Jain, Senior Scientist, CIFE, Mumbai was conferred fellowship (F.S.B.) for his outstanding contributions in Biological Sciences by the Society of Biosciences, Muzaffarnagar (U.P.)



Dr. K. Pani Prasad, Scientist participated in the The World Congress on Biotechnology - Biotechnology 2000 held at International Congress Center, Messedam, Berlin, Germany. Around 2200 participants from 71 countries including USA, UK, China, Japan and India attended the Conference. He received the following awards during the Conference.



1. A letter of appreciation from the organizers for the presentation K. Pani Prasad, Cesar Nadala and P.C. Loh. Development of Latex agglutination kit for detection of yellow head virus in shrimps.
2. A prize for identifying the 3D photograph of cell culture organized by the European Cell Culture Association during the Congress.

Dr. Parimal Sardar, Scientist was awarded second prize for his poster entitled *Matsya Palan Dwara Mal Jal Ka Parishodhan* at the National Conference on *Matsya Evam Parivesh* held at CIFE, Chinhath Center, Lucknow on 10 and 11 August, 2000.

Shri S.R. Sharif and Dr. K. Pani Prasad, Scientist won a cash prize of 200 pounds for their article on Tools for Disease Diagnosis in fish which was published in *Fish Farmer International*, 15(1):17-18 Chile, U.K.

Shri Dasari Bhoomaiah, Technical Officer was awarded following letters of appreciation:



1. The Indian Society of Fisheries Professionals for designing abstract book of First Indian Fisheries Science Congress held at Chandigarh during September 21-23, 2000.
2. The Indian Fisheries Association (IFA) for his contribution to designing and digital imaging of publications of IFA.

Mrs. Anagha Joshi, Jr. Clerk, was awarded a letter of appreciation by the Indian Fisheries Association (IFA) for her contributions to designing and digital imaging of publications of IFA.



Honours and awards

Laurels won during the ICAR Inter-institutional sports tournament

CIFE participated in the ICAR Inter-institutional sports tournament organized at CSWRI, Avikanagar from 16-20 November 2000 and won the following prizes.

4X100mt Relay Race (Runner up)

Shri M.B.Waghela (Captain)
Shri J.M.Koli
Shri Surajbali Jaiswar
Shri Vijay Kuveskar



Kabbadi (Runner up)

Shri B.G. Mandhare (Captain)
Shri Ravindra R. Kadam
Shri Raghuveer
Shri Raju Deshmukh
Shri Jagdish Dhanu
Shri Mahesh B. Waghela
Shri Pradeep G. Angane
Shri Devendra Raorane
Shri Dhanpat Singh
Shri Vasant Ondkar



BEST WOMEN ATHLETE of the tournament

Mrs. Smitha. K

S.No.	Event	Names	Position
1.	100mt	Mrs. Nalini Poojary (Captain)	First
2.	200mt	Mrs. Smitha. K	First
3.	200mt	Mrs. Nalini Poojary	Third
3.	Long Jump	Mrs. Smitha. K	First
4.	High Jump	Mrs. Smitha. K	First
5.	High Jump	Mrs. Nalini Poojary	Second
6.	Discus throw	Mrs. Smitha. K	Second
7.	Javelin Throw	Mrs. Smitha. K	First
8.	Shot put	Mrs. Smitha. K	Third
9.	Badminton(Doubles)	Mrs. Smitha. K	Runner up
10.	Chess	Miss. Revti Dhongde	First



Laurels won during the ICAR Interzonal sports tournament

Mrs. Smita K.

High jump	First place
200mt	Second place
Long jump	second place
Javelin	Third place





CIFE gets Ashirwad Award for promotion of working in Official Language

'Ashirwad' a reputed organization of Mumbai, declared CIFE as the Best Institute among all the Central Government Offices located at Mumbai, for its contribution in the field of Hindi. The *Chal Vaijayanti Rajbhasha Shield* and *Ashirwad Rajbhasha Samman* with a memento were received by Shri Ravi Kumar, Senior Administrative Officer, Dr. S.D. Singh, Principal Scientist (In-Charge, Hindi) and Shri R.P. Uniyal, Asst. Director (O.L.) on behalf of Dr. S. Ayyappan, Director on September 8, 2000.



The Rajashree Tandon Award

CIFE bagged for the second time the Rajashree Tandon Award of ICAR for promoting Hindi. Dr.S.A.H.Abidi, former Director of CIFE and Shri R.P.Uniyal, Asstt. Director(O.L.) received this award from Hon'ble M.P. Shri Jagdambi Prasad Yadav.



Linkages and collaboration

CIFE maintains linkages with various national and International organizations and agencies for faculty exchange and research collaborations. These would further be enlarged and strengthened during the X Plan for a more fruitful academic, research, and extension activities through multi-disciplinary, collaborative research, with the following Institutions:

International institutions

1. International Ocean Institute, Operational Centre, India (Oceanography and Coastal zone management)
2. International Ocean Institute, Malta (Oceanography and Coastal zone management)
3. ICLARM (Aquaculture)
4. FAO (Capture and Culture Fisheries, AHRD)
5. SEAFDEC (Aquaculture)
6. NACA (Aquaculture)

CSIR Institutes

1. ITRC, Lucknow (Toxicology)
2. CDRI, Lucknow (Drug based sea resources)
3. CIMAP, Lucknow (Drug based sea resources)
4. CFTRI, Mysore (Product development)
5. NIO, Goa (Fisheries oceanography)

ICAR Institutes

1. CMFRI Cochin (Marine fisheries and sea farming)
2. CIBA Madras (Brackishwater aquaculture)
3. CIFA, Bhubaneswar (Freshwater aquaculture)
4. NRC-CWC, Bhimtal (Coldwater fisheries)
5. CICFRI, Barrackpore (Inland capture fisheries)
6. NBFGR, Lucknow (Genetics and biotechnology)
7. CIFT, Cochin (Fisheries technology)

GOI Organizations

1. IFP, Cochin (Fish products)
2. CICEF, Bangalore (Development of fish harbours & coastal aquaculture farms)
3. CIFNET, Cochin (Nautical engineering)
4. FSI, Mumbai (Exploratory survey)
5. DOD, New Delhi (Oceanography)
6. DST, New Delhi (Biotechnology)
7. MPEDA, Cochin (Ornamental fish culture)

Other Institutes

1. NIN, Hyderabad (Fish nutrition)
2. IIT, Kharagapur (Aquaculture engineering)
3. IIT, Madras (Ocean engineering & coastal zone management)
4. ZSI, Calcutta (Basic taxonomy)
5. Goa University (Biotechnology)
6. IIS, Bangalore (Molecular biology & biotechnology)
7. Cochin University of Science & Technology (Industrial fisheries)
8. NRSA, Hyderabad (Remote sensing)



Externally funded projects

1. Thermal tolerance of important fish species from River Kali Karnataka

Department of Atomic Energy

Dr. S. Ayyappan

Rs. 12,24,560/-

1999-2002

2. Intensive seed raising and growout production of carp through multiple cropping

Department of Science and Technology

Dr. S. Ayyappan

Approx. Rs. 10,00,000/-

2000-2003

3. Assessment of environmental parameters and the marine living resources (Primary & Secondary in the Indian EEZ and the role of myctophid fauna in the mesopelagic habitat)

Department of Ocean Development

Dr. C.S. Purushothaman

Rs. 2,80,000/-

1997-2001



4. Resource assessment & biology of the deep sea fishes along the continental slope of the Indian EEZ

Department of Ocean Development

Dr. R. S. Biradar

Rs. 4,24,000/-

1997-2001

5. Studies on deep scattering layer

Department of Ocean Development

Dr. B.B. Nayak

Rs. 4,88,000/-

1997-2001

6. Harvest technology & catch composition of deep sea fishery resource in the Indian EEZ

Department of Ocean Development

Dr. Latha Shenoy

Rs. 3,95,000/-

1997-2001

7. Laboratory and field culture of edible seaweeds along Maharashtra coast and their product development for health and nutrition

Department of Ocean Development

Dr. (Mrs.) Kiran Dube

Rs. 10,24,000/-

2000-2003



8. Standardization of Techniques for commercial seed production of giant prawn using inland saline water

A.P. Cess Fund, ICAR

Dr. A. K. Jain

Rs. 13,39,000

1998-2001

9. Microflora associated with Histamine formation & Histamine decomposition

A.P. Cess Fund, ICAR

Dr. B. B. Nayak

1999-2002

10. Development of Interactive CD-ROM for finfish and shellfish diseases

Education Division, ICAR

Dr. Pani Prasad

Rs. 5,50,000/-

2001-2002



11. Cytogenetic and molecular characterization of the giant freshwater prawn

A.P. Cess Fund, ICAR

Dr. W.S. Lakra

Rs. 17,74,392

2000-2003

12. Fish production using brackishwater in arid ecosystem

National Agriculture Technological Project

Dr. A.K. Jain

Rs. 25,00,000/-

2000-2002



13. In-service training programme in molecular Biology

Department of Biotechnology

Dr. S. Ayyappan

Rs. 59,37,000/-

2000-2003

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- 1) *Mase va Jhingyapasun Khadya Padharth* - (Food products from fish and prawn)
- 2) *Nimkharya panyatil kolambi sheti* - (Brackishwater prawn farming)
- 3) *Carp Maslyanchya beej utpadna sathi vikasit jhaleti vartulakar ubar* - Circular hatchery
- 4) *Godya panyatil carp masyanchi mishrit sheti* - Composite fish culture

Audio Cassette

Matsya ani jhinga palan An audio cassette in Marathi (Script : Mrs. Asha Landge, Voice over : Dr. S. Ayyappan, Mrs. Asha Landge, Mr. Alkesh Dwivedi, Mr. Devendra V. Raorane)

Training Manuals

Fish and fish seed in seasonal and perennial ponds

Marine Biotechnology

Computer Applications in Fisheries

Quality Management in Export of Seafood Products

Advances in Immunopathological Techniques in Fish and Shellfish Health Management

Broodstock Management and Selection in Fish Seed Production

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List of approved on-going projects

1. Aquaculture productivity enhancement in Eastern India

Sub Projects:

- Development of aquafeed for ornamental fish
- Studies on aflatoxin B1 in fish feed in relation to fish health and performance, and human health hazards
- Chemical and toxicological studies of some dangerous pollutants in sewage-fed fisheries of Calcutta
- Reproductive biology and breeding of a brackishwater fish, *Chanos chanos*, through hormonal manipulation and rearing of spawn up to the fry stage
- Studies of some freshwater and saline *bheries* in West Bengal

2. Evaluation of fish and shellfish species for aquaculture in Uttar Pradesh

Sub Projects:

- Integrated aquaculture in *usar* land
- Utilisation of freshwater mussel, *Lamellidens marginalis* Lamark, available in and around Lucknow for pearl culture technology and for therapeutic purposes
- Standardisation and transfer of technology for breeding and culture of *Clarias batrachus*
- Identification of constraints in freshwater prawn, *Macrobrachium rosenbergii*, culture technology in agroclimatic conditions of eastern UP and its extension (as a technology demonstration programme)

3. Studies on population genetics and breeding of selected finfish and shellfish species

Sub Projects:

- Studies on population genetics of marine shrimp, *Penaeus monodon*
- Estimation of rate of inbreeding in carp hatcheries of Maharashtra
- Optimisation of sperm: egg ratio in Indian carps
- Biological and cryopreservation aspects of gametes and embryos of giant freshwater prawn

4. Biodiversity and fish health conditions of the northwest coast of India

Sub Projects:

- Mapping of the biodiversity along the Mumbai Coast with special reference to pollution
- Parasitological, microbiological and histo- pathological evaluation of fish fauna of the coastal region of Maharashtra
- Characterisation and comparative evaluation of macromolecules associated with virulence in pathogenic bacteria, *Edwardsiella tarda* and *Aeromonas hydrophila*
- Mapping of biotoxins in marine conidiids and cnidarians and evaluation of their beneficial uses.

5. Management of marine fishery resources of Maharashtra Coast

Sub Projects:

- Fish stock assessment and management of some demersal

fishery resources of Maharashtra coast

- Testing the suitability of netting materials for fish gears and development of a laboratory model for field use

6. Characterization and refinement of fish and fishery products

Sub Projects:

- Studies on DNA fingerprinting and RFLP profiles of commercially important and endangered species
- Value-added products from low-cost fish by modern and improved conventional methods
- Screening, characterization and evaluation of feeding stimulants and flavour attractants
- Integrated approach for development of an economically viable feed for IMC during life stages of spawn to fingerling

7. Standardisation of practices for sustainable aquaculture

Sub Projects:

- Comparative evaluation of extent of impact of agriculture/industry/fisheries and aquaculture on the coastal aquatic ecosystems in selected study areas
- Trials on cage culture of commercially important fishes in open waters of Lonavla
- Somatic and gonadal development of brackishwater finfish under ambient culture conditions off Mumbai Coast
- Refinement of freshwater pearl culture technology using alternative nucleus beads
- Impact of certain organophosphorus pesticides on body fluids and tissue of a common teleost, *Labeo rohita*

Contract research project

A contract research project entitled *Evaluation of cottonseed meal derived from Bt. Cotton seed as a feed ingredient for Indian catfish Magur (Clarias batrachus)* was signed between the Director, Central Institute of Fisheries Education, Mumbai and M/s Maharashtra Hybrids Seeds Company Limited, Mumbai. Under the project, a 28 days trial on evaluating the efficacy of Bt. Cotton seed containing gossypol in 2 concentrations was carried out along with two control sets, one comprising of commercial cotton seed meal and another one without cotton seed meal. The experiment was undertaken in 300l plastic pools under controlled temperature ($28 \pm 2^\circ\text{C}$) and optimum dissolved oxygen levels in five replicates with *Clarias batrachus* as the test fish.

The study revealed no significant effect on the survival, growth rate, feed conversion and composition of bodies of the test fish, when fed both with autoclaved Bt. Cotton seed and non autoclaved Bt. Cotton seed meal. The above parameters when compared with the diet containing commercial cotton seed indicated poor survival, growth, feed conversion and body proximate composition. This work was carried out by a team comprising Dr. K.K. Jain, Senior Scientist; Dr. Sudhir Raizada, Senior Scientist and Dr. P.P. Srivastava, Technical Officer in the Digestive Physiology and Nutrition Laboratory at C.I.F.E., Mumbai during September-December, 2000. The experiment was successfully completed and final report was submitted to the party.



Participation of faculty in conferences, meeting, workshops, seminar, symposia etc

11.1 Participation of Faculty in Conferences, Meeting, Workshops, Seminar, Symposia etc. in India

Details of participation	Name and Designation
The ONGC Consultancy project meeting at Goa (April 19, 2000)	Dr. S.C. Mukherjee, Director Incharge, Shri Ravi Kumar, SAO and Dr. K. Pani Prasad, Scientist
Workshop on Rajbhasha, NAARM, Hyderabad (April 28-29, 2000)	Mr. R.P. Uniyal, Asstt. Director (O.L)
The Third Meeting of Coastal Zone Management for Daman, Diu & Dadra Nagar Haveli.	Dr. M.P.S. Kohli, Principal Scientist
Signing of the lease deed with the Govt. of Uttar Pradesh, CIFE Centre at Chinhat, Lucknow, (June 5, 2000)	Dr. S.C. Mukherjee, Director in-charge
The National Symposium on Sustainable Development and Conservation of Cold Water Fish Genetic Resources, Himachal Pradesh Krishi Vishvavidyalaya, Palampur (June 7-8, 2000)	Dr. Gopalkrishna, Scientist
Meeting with the Haryana Fisheries Department and Rohtak Centre of CIFE (June 29, 2000)	Dr. S. Ayyappan, Director
Summer School on Aquaculture Biotechnology CIFA, Bhubaneswar (June 12 - July 3, 2000)	Dr. Gopalkrishna, Scientist
International Conference on Genetics in Aquaculture, Townsville, Australia July 15-22, 2000	Dr W.S. Lakra, Principal Scientist
Workshop on National Fishworkers Forum, Arnala fishing village, Thane District, Maharashtra (July 21-22, 2000)	Dr. S. N. Ojha, Senior Scientist and Dr. S. Chakraborty, Senior Scientist
Meeting on ARS disciplines for fisheries, ICAR, New Delhi (July 27, 2000)	Dr. S.C. Mukherjee, Joint Director
The Task force Meeting of DBT, New Delhi (August 3-4, 2000)	Dr. S. Ayyappan, Director
National Academy of Agricultural Sciences (NAAS) Meetings ICAR, New Delhi (August 8, 2000)	Dr. S. Ayyappan, Director and Dr. S.C. Mukherjee, Joint Director
The inauguration of MAHSHAV OTS Course in Aquaculture Development, CIFA, Bhubaneswar (September 13, 2000)	Dr. S. Ayyappan, Director
ICAR Society Meeting, New Delhi (September 15, 2000)	Dr. S. Ayyappan, Director

Participation of faculty in conferences, meeting, workshops, seminar, symposia etc

First Science Congress organised by Indian Society of Fisheries Professionals, Chandigarh (21-23 September, 2000)

Dr. M.P.Singh Kohli, Principal Scientist,
Dr. Neelam Saharan, Senior Scientist,
Dr. Gopal Krishna, Scientist,
Dr. P.K. Pandey, Scientist,
Dr. S. Raizada, Scientist,
Mr. A.K. Reddy, Technical Officer,
Dr. Chandra Prakash, Technical Officer,
Mr. R.K. Langer, Technical Officer,
Mr. D. Bhoomaiah, Technical Officer,
Dr. R.S. Rana Technical Officer,
Mr. Ragabhat, Technical Officer,
Mr. S. G.S. Zaidi, Technical Officer and
Dr. M. Ali, Technical Officer

HRD Technical Committee Meeting of Department of Fisheries, Govt. of A.P., Kakinada (October 12, 2000)

Dr. G. Venugopal, Senior scientist

National Symposium on Accreditation, NBPGR, Pusa (November 2, 2000)

Dr. S. Ayyappan, Director

National Seminar on Bioscience at B.R.Agra University, Agra, (November 5-7, 2000)

Dr. Radha C. Das, Principal Scientist

Meeting at ICAR and KADM, New Delhi (November 9-10, 2000)

Dr. S.C.Mukherjee, Joint Director

Meeting of Town Official language Implementation Committee, Mumbai (November 17, 2000)

Mr. R.P. Uniyal, Asstt. Director. (O.I)

Vice Chancellors' Meeting at Pusa, New Delhi (November 21, 2000)

Dr. S. Ayyappan, Director

Meeting with World Bank consultants at New Delhi for discussions on Higher Education including University governance, funding, international ventures and other related topics, New Delhi (November 23, 2000)

Dr. S. Ayyappan, Director

Coastal and Marine Ecosystems of National Bio-resource Development Board, M S Swaminathan Research Foundation, Chennai (November 27, 2000)

Dr. S. Ayyappan, Director

National Seminar on Sustainable Fisheries for Nutritional Security, Chennai (November 30 - December 1, 2000)

Dr. S. Ayyappan, Director

National Seminar on Sustainable Fisheries for Nutritional Security of School of Biological Sciences, Madurai Kamraj University, (November 30 - December 2, 2000)

Dr. U. K. Maheshwari, Senior Scientist

Meeting on Development of fishery in the NE and other hilly regions of India ICAR, New Delhi (December 7, 2000)

Dr. S. C. Mukherjee, Joint Director

Participation of faculty in conferences, meeting, workshops, seminar, symposia etc

National Workshop on Aadhunik Jalketi CIFA, Bhubaneswar (Orissa) (December 12-13, 2000)	Dr. Archana Sinha, Senior Scientist
One day Workshop on Development of Agriculture conducted by NABARD, Kakinada (December 15, 2000)	Dr. G. Venugopal, Senior Scientist
Working Group Meeting of PSSCIVE (NCERT) Bhopal, (December 18-22, 2000)	Dr. Archana Sinha, Senior Scientist
Seminar on Aquaculture, KGRL College, Bhimavaram Andhra Pradesh (December 28, 2000)	Mr. A.K. Reddy, Technical Officer,
88 th Indian Science Congress, New Delhi. (January 3-7, 2001)	Dr. S. Ayyappan, Director, Dr. M.P.Singh Kohli, Principal Scientist, Dr. W.S. Lakra, Principal Scientist , Dr. S.D.Singh, Principal Scientist, Dr. A.K.Jain, Scientist (SS) Mr. Shyam Salim, Scientist and Shri D. Bhoomaiah, Technical Officer
Fourth meeting of Daman and Diu Island Coastal Zone Management Authority, Daman (January 4, 2001)	Dr. R.S. Biradar, Principal Scientist
Workshop on Prospects of Scamper Culture, Rajahmundry, Kakinada (January 5, 2001)	Dr. Venugopal, Senior Scientist
Symposium on Marine Biotechnology at D.G. Ruparel College, Mumbai (January 8, 2001)	Dr W.S. Lakra, Principal Scientist
National Symposium on Aquaculture Medicines at CUSAT, Kochi (January 18, 2001)	Dr. S. Ayyappan, Director
National Workshop on Aquaculture medicine, Cochin University of Science and Technology, Kochi, Kerala (January 18-20, 2001)	Dr. S.D. Singh, Principal Scientist
Meeting with Director General ICAR to discuss the issue relating to utilization of Swiss Development Fund (January 24, 2001)	Dr. S. Ayyappan, Director
5 th Divisional Meeting of the Fisheries Research Institute at NBFGR, Lucknow (January 30, 2001)	Dr. S. Ayyappan, Director
National Symposium on Meteorology for sustainable Development Tata Institute of Fundamental Research, Mumbai (February 6-9, 2001)	Dr. S. Raizada, Scientist
Workshop on Hindi, Rajbhasha Kiran, Virar, Mumbai	Mr. R.P. Uniyal, Asst. Director, (O.L)

Participation of faculty in conferences, meeting, workshops, seminar, symposia etc

(February 9-10, 2001)

National Seminar on "Indian Fisheries : Status and Prospects in relation to Environmental Dynamics.Jammu University (March 3 to 5 , 2001)

Dr. Archana Sinha,Senior Scientist

Fisheries farmers one day Conference of Fisheries Co-operative Society of Maharashtra State, Dr. M.G. Parulekar High School, Vasai, (March 4, 2001)

Ms. Asha T. Landge, Technical Officer

National Conference on Fish and Fisheries challenges in the Millennium,Osmania University, Hyderabad, (March 14-15, 2001)

Shri. K. Murali Mohan,
Shri. P. Srinivasa Rao and
Shri. R.Ravishankar Patnaik,
Technical Officers

National Seminar on Fish Health and Management , LN Mithila University (March 25 -27, 2001)

Dr. Parimal Sardar,Scientist

Meeting of Life Sciences Experts for CSIR, New Delhi (March 26-29, 2001)

Dr W.S. Lakra, Principal Scientist

Participation of faculty in conferences, meeting, workshops, seminar, symposia etc

11.2 Participation of Faculty in training programmes in India

Name & Designation	Details of Participation in Training Programmes
Ms. Asha T. Landge, Technical officer	Training programme on Aquatic Microbiological and Fish Health Management, MIRCEN, CIFA, Bhubaneswar (April 27- May 1, 2000)
Mr. R. P. Raman, Scientist (SS)	Gahan Hindi Prashikshan evam Karyashala, NAARM, Hyderabad (July 3-7, 2000)
Dr. G. Venkateshwarlu, Senior Scientist	Short course on Intellectual Property Rights in Agriculture : The emerging Scenario, Department of Genetics and Plant Breeding, University of Agricultural Sciences, GKV, Bangalore (August 1-10, 2000)
Dr. S. Raizada, Scientist, Dr. Somdutt Scientist, Dr. A.K. Jain, Scientist (SS) and Dr.C.S. Chaturvedi, Technical Officer	Training programme on Aquaculture Development, MAHSHAV- Centre of International Co-operation, Israel and ICAR, CIFA Bhubaneswar (September 12-24, 2000)
Dr. A.K. Sharma, Scientist (SS)	National training on Advances in Cellular and Molecular Techniques for Livestock Improvement, NDRI, Karnal (September 19 October 17, 2000)
Dr. P.P. Srivastava, Technical Officer	The Winter School on Techniques of Chromosome and Gene Manipulation in Fishes, Madurai Kamaraj University, Madurai (October 3 - October 24, 2000)
Mr. P. Srinivasa Rao, Technical Officer	Training programme on Management of Giant Freshwater Prawn Hatchery, CIFE, Mumbai, (October 16 25 , 2000.)
Mr. R.P. Uniyal, Asstt. Director (O.L)	Training on Hindi Computer, NIC, New Delhi (November 6-10, 2000)
Mr. Manoj Kumar Pachauri, Admn. Officer	The Special Workshop on Roster re-writing/re-casting for Liaison officers for SCs/STs and OBCs and dealing Assistants at National Institute of Public Administration, Bangalore, (November 10-13, 2000)
Dr. Subhendu Datta, Scientist	CAS training programme on Computer Application in Fisheries at CIFE, Mumbai (November 16- December 6, 2000)
Mr. Alkesh Dwivedi Technical Officer	Training programme on Seaweed Culture and Utilization Trainer's Centre of Central Marine Fisheries Research Institute, Cochin (November 20-29 , 2000)
Ms. Asha T. Landge, Technical Officer	Freshwater Pearl Culture, CIFA, Bhubaneshwar (November 21-30, 2000)

Participation of faculty in conferences, meeting, workshops, seminar, symposia etc

Dr. Parimal Sardar, Scientist	Short course on Feed Microbiology at IVRI, Izatnagar (November 23 to December 22, 2000)
Dr Aparna Chaudhari, Scientist	Training programme on Safety Aspects in Research Applications of Ionising Radiations, BARC, Mumbai, (December 3-12, 2000)
Mr. Dasari Bhoomaiah, Technical Officer	Diploma course on Multimedia Engineering with proficiency in Macromedia DIRECTOR-Adobe Premiere, Dots Software Solutions India Limited, Mumbai (December 5, 2000- March 28, 2001)
Shri S.K. Sharma, Technical Officer, Shri Deepak Khogare, Technical Officer	Short course on "Digital Imaging and Graphics" at CIFE, Mumbai February 26 March 3, 2001
Dr. G. Venugopal, Senior Scientist	CAS training programme on Advances in Immunopathological techniques in Fish and Shellfish Health Management at CIFE, Mumbai (January 5 February 5, 2001)
Ms.Kaberi Bishwas Stenographer	Computer Training programme in Hindi (January 8-12, 2001)
Dr. P.K.Ghosh, Senior Scientist	CAS Training Programme on Advances in Immunopathological Techniques in Shell and fin Fish Health Management, CIFE, Mumbai (January 15 - February 5, 2001)
Dr. M.K. Chowksey, Technical Officer	The UNESCO Regional Training Course in Food Safety through newer and advanced Biotechnological Approaches at CFTRI, Mysore (January 15-27, 2001)
Dr. S.D. Singh, Principal Scientist	Short course on "PCR & related techniques in Disease Diagnosis" IVRI, Izatnagar (February - March, 2001)
Dr. A.K. Jain, Scientist (SS) Shri P. K. Roy Scientist (SS), Shri S. S. H. Razvi, Scientist (SS) and Shri. K.B.S. Murthy, Technical Officer	Training on Broodstock Management and Genetic selection in Fish Seed Production, CIFE Mumbai, (February 12 March 4, 2000)
Ms. Rekha Nair, Hindi Translator	Computer Training in Hindi, NIC, New Delhi (February 19-23, 2000)

Participation of faculty in conferences, meeting, workshops, seminar, symposia etc

VISITS ABROAD

Name	Details of participation
Dr. A.K. Pal, Senior Scientist	Ninth Congress of the Asian-Australian Association of Animal Production (AAAP) on Animal Production for a Consuming World at University of New South Wales, Sydney, Australia, July 2-7, 2000
Dr. W.S.lakra	International Conference on Genetics in Aquaculture VII held at Townsville, Australia July 15-22, 2000
Dr. S. Ayyappan, Director	R & D programme of South Australian Research and Development Institute (SARDI), Australia (Adelaide, Port Lincoln), July 24-30, 2000.
Dr. S.D. Singh, Principal Scientist	Third World Fisheries Congress held at Beijing, China, October 31- November 3, 2000
Dr. B.B.Nayak, Scientist	Post Doctoral Studies in Microbiology in Ocean Research Institute, Univesity of Tokyo, Japan awarded by the Japanese Society for Promotion of Science (JSPS), January 24, 2001 for a period of 2 years.
Dr. K. Pani Prasad, Scientist	The World Congress on Biotechnology-Biotechnology, 2000 International Congress Center, Messedam, Berlin, Germany, September 3 - 7, 2000

Workshops, Seminars, Summer Institutes, Meetings etc. organised

12.1 National Seminar on Matsya Evam Parivesh (Fisheries and Environment)



A two day National Seminar in Hindi on *Matsya Evam Parivesh* (Fisheries and Environment) was organised by CIFE, Mumbai at NEDA Complex, Chinhat from August 10-11, 2000. The Seminar was inaugurated by the Hon'ble Governor of Uttar Pradesh, His Excellency Shri Suraj Bhan. Hon'ble Minister of Animal Husbandry and Fisheries, U.P., Shri M. Phagu Chauhan and Hon'ble Minister for Culture, Shri Ramesh Pokhariyal also spoke on the occasion. A total of 84 papers were presented in the Seminar. An Exhibition was put up and awards were given to three best posters. Smt. Urmila Singh, Shri Laxman and Shri Ram Kishore were felicitated with the *Matsya Krishak Shri* award. On this occasion Dr. S.N. Dwivedi, Dr. S.A.H. Abidi, Dr. S.D. Tripathi, Dr. K.D. Pandey, Dr. Y.R. Tripathi, Dr. V.K. Johri, Dr. P. Narayan and Dr. S. C. Gargh were felicitated for their contributions to the field of fisheries. A Farmers' Meet was also organised for the benefit of the fish farmers.

12.2 Summer School on Recent Advances in Marine Biotechnology

A Summer School on Recent Advances in Marine Biotechnology was organised from August 7-27, 2000. The programme was inaugurated by Shri G. Ranganathan, IAS, Commissioner of BMC, Mumbai. A total of 23 participants attended the Summer School.



12.3 National Seminar in Hindi on Indian Aquaculture and Coastal Zone Management

A two day National Seminar on *Bhartiya Jalkrishi Evam Tatvartiya Shetra Prabhand* (Indian Aquaculture and Coastal Zone Management) was organised on September 7-8, 2000 at CIFE, Mumbai. On this occasion Dr. S. Ayyappan, Director welcomed the Chief Guest Dr. A.G. Sawant, Chairman, Agricultural Scientists' Recruitment Board, New Delhi; Dr. M. Y. Kamal, Vice Chancellor, Sher-e-Kashmir University of Science and Technology, Srinagar and other dignitaries. The Seminar was inaugurated by Dr. A.G. Sawant. The function was marked with felicitation of several dignitaries in the field including Dr. S.D. Tripathi, Dr. B.S. Saxena and Dr. V.S. Somvanshi. On this occasion, Dr. S.N. Ogale of Tata Electric Company was conferred with the honour of *Matsya Krishak* for his outstanding contribution in the breeding and conservation of Mahseer at Lonavala, Maharashtra. A total of 36 papers were presented in Hindi.



12.4 Brainstorming Session

CIFE, in collaboration with the Education Division of ICAR, conducted a Brainstorming Session on Manpower Requirements and HRD In Fisheries Sector on October 20-21, 2000. Dr. S. L. Mehta, DDG (Education), ICAR inaugurated the Brainstorming Session and remarks were made by Dr. S. A. H. Abidi, Member, ASRB, Dr. K. Gopakumar, DDG (Fisheries), and Dr. M. Y. Kamal, Vice-Chancellor, SKUAST.



Dr. S. Ayyappan, Director and Dr. R. S. Biradar, Principal Scientist, CIFE, presented a base-paper. This was followed by six technical sessions spread over two days in which 57 presentations were made by the Directors of the fisheries Institutes of ICAR, Deans of the Faculties of Fisheries of the Colleges of Fisheries, former Directors of CIFE, and representatives of the Industry, State Departments of Fisheries, agricultural banking sector, media, NIO, BARC, CIFE faculty, and student community.

The programme came to an end with a Plenary Session chaired by Dr. S. N. Dwivedi, Director General, MP State Council of Science and Technology,

which made 8 recommendations of far-reaching consequences to the fisheries sector, which are as follows:

As a result of intense deliberations, it was recommended that an exercise on correct estimation of manpower requirement in the fisheries sector needs to be carried out with CIFE as the nodal institute.

In accordance with the concerns regarding employment of fisheries graduates, and requirements of the sector, it was recommended that new courses at under-graduate and post-graduate levels be formulated in tune with the provisions of Agricultural Research Service, State Fisheries Departments and Aquaculture industry.

In view of the recent developments in the sector, it was recommended that the syllabi of different degree programs are updated and suitably modified

with consultations among different educational institutions.

For an efficient and productive fisheries research and education system in the country it is imperative to establish vibrant linkages between Central Research Institutes, State Fisheries Departments, the Industry and international institutions.

The necessity of disseminating latest knowledge and technology through distance learning was emphasized along with the need to start vocational courses in fisheries.

In order to provide for better job opportunities to fisheries graduates, it was recommended that placement cells at Fisheries Colleges and Institutes to explore and develop employment avenues be established. Further, the various recruitment agencies are to be informed of the new resource of trained fisheries graduates and necessary action in this regard taken at different levels.

It was recommended that the Fisheries Colleges offering undergraduate courses should have a minimum number of seven departments of Fisheries Biology, Aquaculture, Processing Technology, Fisheries Hydrography, Fisheries Engineering and Fishing Technology, Social Sciences and Fisheries Microbiology and Biotechnology

The immediate need to develop quality education material in the form of books, manuals, CDs, multimedia for efficient fisheries education was emphasized.



12.5 National Symposium on Fishery Technologies and their Commercialisation

A National Symposium on Fishery Technologies and their Commercialisation was organised by CIFE, Mumbai in collaboration with the Indian Fisheries Association from January 11-12, 2001. The Symposium was inaugurated by the Dr. Debendra Pradhan, Hon'ble Union Minister of State for Agriculture. Shri Sunil Dutt, Hon'ble Member of Parliament was the Guest of Honour.



On this occasion Dr. V.R.P.Sinha, World Bank Consultant; Dr. K.V. Devaraj, Former Vice Chancellor, VAS, Bangalore and Dr. J.V.H.Dixitulu, Editor, *Fishing Chimes* were conferred the Fellowships of the Indian Fisheries Association.

Dr. R.M. Lala, Director, Tata Trust Mumbai delivered the Presidential Address. The following publications were released on this occasion.

Books

- 1) *Matsya Jalyan evam Sambhar* Fishing Craft and Gears (Bilingual)
- 2) *Matsya Parisanskaran* Fish Processing (Bilingual)
- 3) *Bhartiya Meetha Pani Kekada* Indian Freshwater Crab (Bilingual)

Booklets/Pamphlets (In Marathi)

- 1) *Godya panyatil jhinyachi sheti* - (Freshwater prawn farming)
- 2) *Mase va Jhinyapasun Khadya Padharth* - (Food products from fish and prawn)
- 3) *Nimkharya panyatil kolambi sheti* - (Brackishwater prawn farming)
- 4) *Carp Maslyanchya beej utpadna sathi vikasit jhaleti vartulakar ubar* - (Circular hatchery)

5) *Godya panyatil carp masyanchi mishrit sheti* - Composite fish culture

Cassette

- 1) *Matsya ani jhinga palan* An audio cassette in Marathi

A total of 56 papers were presented in this symposium

Hands-on-Training on Accreditation

An Orientation Programme and Hands-on-Training on Accreditation with emphasis on self study of SAUs/constituent Colleges organised by the Education Division of ICAR, New Delhi was held at the Institute on April 24-25, 2000. The Deans of Faculty of various Agricultural Universities participated in the programme.



12.6 STORM- A Short Course on Digital Imaging and Computer Graphics

A short course on 'Digital Imaging and Computer Graphics', first of its kind in ICAR was organised by CIFE, Mumbai during February 26 - March 3, 2001. The programme was inaugurated by Dr. S.D. Tripathi, Former Director of CIFE. A total of 11 participants attended the training programme. The



course covered Corel Draw and Photoshop besides graphic design concepts, digital photography and preparation of exhibition materials. The exhibition of the assignments of the participants was put up on exhibition on the last day. Dr. A.G. Sawant, Chairman ASRB the Chief Guest of the valedictory function distributed the certificates.

ICAR Interzonal Sport Meet 2001

CIFE organised ICAR Interzonal Sports Meet 2001 from 21 to 23 February, 2001 at Mumbai. Padmashri Ms. Ami Ghia Shah, a veteran player, inaugurated the programme on February 21, 2001. The events were conducted in Andheri Sports Complex, Mumbai University, St. Xavier's School, Vile Parle and at CIFE Campus. A total of 35 Institutes participated in the above tournament. Dr. S.A.H. Abidi, Member ASRB distributed the awards and trophies on February 23, 2001.



Meetings organised

Meet	Date
Board of Examiners	May 6, 2000
Official Language Implementation Committee	May 17, 2000
Departmental Promotion Committee	May 25, 2000
Board of Examiners	June 24, 2000
Staff Research Council	July 6-8, 2000
Academic Council	July 15, 2000
Board of Examiners	July 16-19, 2000
Board of Examiners	August 25, 2000
Research Advisory Committee	August 29, 2000
Board of Examiners	November 24-25, 2000
Staff Research Council	December 21, 2000
Academic Council	December 14, 2000
Official Language Implementation Committee	December 18, 2000
Research Advisory Committee	January 10, 2001
Departmental Promotion Committee	January 27, 2001
Board of Examiners	January 29-31, 2001
IJSC	February 12, 2001
Official Language Implementation Committee	March 28, 2001

Distinguished Visitors

Sl.No.	Visitors	Date
1.	Shri C.S. Rao, Financial Advisor, DOD, New Delhi	June 3, 2000
2.	Professor M.S. Swaminathan, Former Director General, ICAR & Chairman, M.S. Swaminathan Research Foundation, Chennai	July 14, 2000
3.	Dr. R.S. Paroda, Secretary, DARE, and DG, ICAR, New Delhi	July 14, 2000
4.	Dr. M.D. Asthana, Chief Advisor, and Dr. D.P.S. Chauhan, Joint Advisor, Planning Commission (Agriculture), Govt. of India	July 18, 2000
5.	A team of Senior officials from Republic of Morocco	August 1-2, 2000
6.	Dr. M.H. Mehta, V.C., Gujarat Agriculture University	September 18, 2000
7.	Shri R.S. Prasad, Financial Advisor, ICAR & Joint Secretary DARE and Dr. K. Gopakumar, Deputy Director General (Fisheries) ICAR	October 17, 2000
8.	Dr. T.C. Jain, Representative Work Bank Project, New Delhi and Member of the World Bank Mission	December 8, 2000
9.	Dr. Vinod Prakash, Vice-Chancellor Jiwaji University, Gwalior	December 27, 2000
10.	Iranian delegation to Kakinada Centre	February 12, 2001

15.1 PARICHAY- The Information Center



The Central Institute of Fisheries Education started an information-cum-service center, PARICHAY, through a single window counter at its entrance. Parichay was inaugurated on September 7, 2000 by Dr. A.G. Sawant, Chairman, ASRB, New Delhi in presence of other distinguished guests, Dr. M. Sinha, Director, CICE, and Dr. S.D. Tripathi, Ex- Director, CIFE. Shri S.N. Ogale, Manager (Environment), Tata Electric Company, Lonavala, Maharashtra; Dr. M.Y. Kamal, Vice Chancellor, Sher-e-Kashmir University of Science and Technology, Jammu & Kashmir, Parichay will provide information in the form of booklets, brochures, books, manuals and technical assistance in soil-water analysis and fish seed sale. It will also promote fisheries by selling T-shirts, caps and other useful gift items.

15.2 MATSYA DARSHAN Museum of CIFE



Matsya Darshan - Museum of CIFE was inaugurated on December 15, 2000 by Hon'ble Union Minister of Agriculture Shri Nitish Kumar. The museum houses a variety of freshwater and marine fishes, crustaceans, corals, shells, etc. Different types of craft and gear are also on display. It also

provides information about the fisheries of India through display panels. It is proving useful and informative to school college students, fisheries enthusiasts and the general public.



Establishment of Infrastructure facilities like hostel canteen, health centre, parking place, wet labs, Administration section, renovation of Guest house, aquaculture facility at the headquarters; establishment of laboratory facilities at Institute's centres at Rohtak and Kolkata; renovation of farm facilities at Institute's centres at Lucknow and Powarkheda; repair of two vessels of the Institute for research and demonstration purpose; and steps for development of the new campus in Mumbai were taken up during the year

15.3 Documentation Services

The Documentation section continued to render active support services towards external reporting of the institute's progress. Reports/documents like monthly reports, quarterly reports, status reports/ action taken reports on the recommendations of the ICAR Regional Committees, News items for the ICAR Reporter/ News, reports for DARE, Quarterly performance review, were compiled and edited by the Section. Besides bringing out the print version of the Institute's Annual Report (1999-2000), a CD version of the same was also made.

15.4 Library services

A total of 354 new entries were added to the library collection. 32 Indian journals and 57 foreign journals and 9 CD-ROM were subscribed during the year. Around 359 visitors and readers consulted the library and 43 reference queries were attended. So far the library has 11 computers connected to the CD-Net.

15.5 Constitution of new cells

Human Resource Development Cell, Intellectual Property Management Cell, Consultancy and Contract Services Cell, Externally Funded Project Management Cell, Student Guidance and Placement Cell were constituted and reactivated the earlier constituted cells and committees were reactivated.

15.6 Celebrations

Independence Day



53rd Independence day was celebrated on 15th August, 2000. To mark the occasion drawing, painting and elocution competitions for children on the themes "India's Independence" and "My Vision of Future India" respectively were organised.

Hindi week

In commemoration of the Golden Jubilee Year of Hindi as Rajbhasha, several competitions like debate, elocution, essay writing, speech contest, etc. were organised for the staff and family members. Mahila Diwas was celebrated by the Ladies Club of CIFE on 31 August, 2000. Competitions like cooking, rangoli, flower arrangement, fancy dress, etc. were organised specifically for ladies. Annual sports like carrom, chess, badminton, tennis, athletics were also conducted during the month. 16th September, 2000 was celebrated as the Annual Day and Hindi Day. Dr. P.V. Dehadrai, Ex-DDG, (Fisheries) ICAR was the Chief Guest on the occasion. The function marked the release of a series of Hindi publications by the Chief Guest. Prizes were distributed by Shri M.B.

Appalwar, IAS, Commissioner of Fisheries, Maharashtra to the winners of the various competitions. This was followed by a cultural programme.

World Environment Day

CIFE celebrated the World Environment Day on 5th June, 2000. A "Sit & Draw" competition and a debate competition for children on the theme "Nature Conservation/Environment Protection" were organised on this occasion.

World Food Day

CIFE Celebrated the World Food Day on 16th October 2000. On this occasion, Dr. Kirit S. Parikh, Former Director, Indira Gandhi Institute of Development Research, Mumbai delivered a Guest lecture on Food Security in India. A drawing and painting competition was organised for staff members and students on the theme "Hunger Free World."

New Year

January 1, 2001 was celebrated as New Year by all the staff member and student on this occasion. The students put a small exhibition on the events of the bygone year 2000.

Republic Day

On the occasion of the Republic day on 26 January, 2001, a Charity Box was installed at the entrance of the institute. Children expressed their patriotic feelings in the form of drawings which was also exhibited at the entrance of the Institute.

15.7 Institute Joint Staff Council

Elections to the Institute Joint Staff Council were held on January 2, 2001 and the following members were elected.

Other activities

Shri C. B. Kareer	Secretary (SS)
Shri G. S. Fernandez	CJSC Member
Shri R. Palaniswamy	Member
Shri J. D. Chandramore	Member
Shri S. R. Jaiswar	Member
Shri M. H. Reddy	Member

The IJSC met on February 12, 2001 and discussed the problems of the staff. Shri G. S. Fernandes, CJSC Member attended the 12th CJSC Meeting at CIFA, Bhubaneswar during March 1-4, 2001.

15.8 Students' Activities

CIFE Post Graduate Students Union (PGSW) was constituted during the year and the Union Elections were held in October, 2000.

23 students participated in the ICAR/SAU Inter University Sports Meet at Acharya N.G. Ranga University, Hyderabad, 23-28 November, 2000 and two students participated in Inter University debating competition held at Ujjain, M.P.

Students conducted a Medical Camp in the campus for students and Staff on December 11, 2000.



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e-Mail: fishinst@bom3.vsnl.net.in

15.1 LIST OF STAFF* (AS ON MARCH 31, 2001) (This is not a seniority list)

CIFE Headquarters,
Mumbai

Director

Dr. S.C. Mukherjee
(Director Incharge till June 15, 2000)
Dr. S.Ayyappan
(Director from June 16, 2000)

Joint Director

Dr. S.C. Mukherjee

Principal Scientists

Dr. M.P. Singh Kohli
Dr. A.D. Diwan
Dr. R.S. Biradar
Dr. C.S. Purushothaman
Dr. S.D. Singh
Dr. W.S. Lakra

Senior Scientists

Dr. Subrata Basu
Dr. (Mrs.) Ratna Tewari
(Till August 31, 2000)
Dr. K.K. Jain
Dr. S.K. Chakravarty
Dr. (Ms.) Kiran Dube
Dr. (Mrs.) Neelam Saharan
Dr. M.B. Iftekhar
Dr. (Ms.) Latha Shenoy
Dr. S.N. Ojha
Dr. K.V. Rajendran (Deputed abroad)
Dr. A.K. Pal
Dr. G. Venkateswarlu

Scientists-SS

Mr. K. Venkateshvaran
Dr. S. Raizada
Dr. Atul Kumar Jain
Dr. Bharat S. Sontakki
(Till May 20, 2000)
Mr. R.P. Raman

Scientists

Dr. Gopal Krishna Saxena
Dr. (Mrs.) Aparna Chaudhari
Mr. P.K. Pandey
Dr. N.P. Sahu (On study leave)
Dr. K. Pani Prasad
Mr. S.K. Patil
Dr. S. Jahageerdar
Dr. B.B. Nayak (Deputed abroad)
Dr. M.B. Patel
Dr. Sanjay Jadhav
Dr. Makesh. M.
Mr. Shyam Salim

Technical Officers T - 8

Mr. S.K. Pal
Mr. Nandlal Singh

T - 7

Mr. S. Natarajan
Mr. A.K. Reddy

T - 6

Mr. R.K. Langer
Dr. Chandra Prakash
Mr. A.K. Padmanabhan
Mr. A.R. Warange
Dr. Ashok Kumar Jaiswar
Dr. R.S. Rana
Mr. Alkesh Dwivedi
Dr. Prem Prakash Srivastava
Mr. R.D. Tandel (On study leave)
Mr. S.G.S. Zaidi
Ms. Rama Sharma (On study leave)

Mr. G.K. Rao
Mr. S.K. Pandey
Mrs. Asha T. Landge

T - 5

Mr. A.D. Ragabhatat
Ms. Ujjwala Gadre

Mr. Chandrakant M.H

Mr. D.L. Sawant
Mr. Deepak Khogre
Mr. Dasari Bhoomaiah
Mr. K.P. Khalsa
Mr. M.K. Chouksey
Mr. Satish Kamat
Mr. J.P. Patil

Technicians T - 4

Mr. R.H. Rajguru
Ms. Aravindra Mehta
Ms. K. Thilagavathi
Mr. Palaniswamy
Ms. Nalini Poojary
Mr. K.P. Shetty
Mr. P.K. Das
Mr. A.B. Birade
Ms. Madhavi Pikle
Mr. A. Sadanand
Mr. P.B. Sonawane
Ms. S.M. Bagwe
Mr. S.M. Shinde
Ms. S.P. Nalawade
Mr. Chandrakant Kareer
Ms. S.S. Gajbhiye
Mr. B.G. Mandhare
Mr. R.G. Kudale
Mr. Bhagat Singh Rawat

T - II - 3

Ms. Rajani Pagare
Mr. J.M. Koli
Ms. Revati Dhongde
Ms. Rekha Nair

T - I 3

Mr. S.V. Patil
Mr. B.J. Rathod
Mr. Sanjeev Bandkar
Mr. N.K. Aglave
Ms. B.S. Ghagre
Mr. Avinash Sable
Mr. Baburam Jaiswar

T - 2

Mr. S.L. Koli
Mr. B.T. Phande
Mr. S.R. Vinarkar

T - 1

Mr. A. Kokane
Mr. Arun Puri (Gosavi)
Mr. A. D. Deshmukh
Mr. Sikander Sheikh
Mr. Dhanpat Singh
Mr. A.N. Mahadik
Mr. V.K. Bhawe
Ms. V.D. Misale

Administration & Finance

Senior Administrative Officer
Mr. Ravi Kumar

Finance & Accounts Officer

Mr. S.K. Pathak

Administrative Officer

Mr. M.K. Pachauri

Assistant Director (Official Language)

Mr. R.P. Uniyal

Assistant Administrative Officer

Ms. Kamala B. Menon
Mr. K. Mahmood
Mr. P. B. Tandav
Mr. R. L. Mohite
Mr. Sunil Kumar

Private Secretaries

Ms. M. Abraham
Ms. T. Kuruvilla

Personal Assistant

Mr. G.S. Fernandes

Stenographer (Grade III)

Ms. S. R. Arutla
Mr. P.R. Ninawe

Assistants

Mr. S.S. Kocharekar
Mr. T.D. Kumar
Ms. S.S. Parab
Ms. Valsa Pavitrani
Mr. Y.P. Belgaonkar
Mr. B.L. Kokkula
Ms. N.Y. Raorane
Mrs. Sushma Singh
Mrs. S.R. Wadhavkar

Mrs. Deepika Behl

Upper Division Clerks

Mrs. S.V. Kadam
Mrs. A.V. Shukla
Mrs. D.S. Naik
Mr. J.D. Chandramore
Mrs. F. Fernandes
Ms. Chandrarekha S. Khundol
Mr. R.R. Shah
Mr. D.S. Ingle
Mr. R.R. Kadam
Mr. R.G. Gamare
Mrs. Swati Koli

Lower Division Clerks

Mr. Vijay Kuveskar
Mr. Devendra Raorane
Mrs. Sujata Pawar
Mrs. Anagha Joshi
Ms. Yashoda S. Dhatavkar
Mr. A.G. Kolambkar
Mr. Bharat Kumar Chauhan
Mrs. Sanyuja S. Parab
Mr. Pradeep Angane
Mrs. Chaitali Raut
Mrs. Pragati Pawaskar
Mrs. Anu Grover
Mr. K.K. Jagtap
Mr. Suresh.H. Bhosle
Ms. G. Guganya
Mrs. Smitha. K
Ms. Nalini A. Sawant
Mr. M.B. Waghela

Supporting Staff

Grade IV

Mr. Shantaram D. Jadhav
Mr. S.L. Garate
Mr. Haridas Sukhan
Mr. N.A. Bijalli

Grade III

Mr. B.K. Raut
Mr. K.D. Solanki
Mr. P.B. Jadhav
Mr. Indersingh (Till 30 November 2000)
Mrs. S.M. Supat
Mr. Madhu Wasnik

Grade II

Mr. I.R. Solanki
Mr. S.V. Gawade
Mr. Vinod P. Tiwari
Mr. Surajbali R. Jaiswar
Mr. B.S. Tamankar
Mr. Ashok R. More

Mr. D.B. Gaikwad
Ms. Vandana Tambe
Ms. K.R. Ahire

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Mr. T.G. Gaikwad
Mr. J.K. Makwana
Mr. Ankush R. Dore
Mr. Bandu R. Chavan
Mr. M.P. Kotian
Mr. G. Kamble
Mr. Ashok R. Shingade
Mr. Jagdish Namdev Dhanu
Mr. Nandu L. Ghane
Mr. Vasant N. Ondkar
Mrs. Shantabai Kamble
Mr. S.P. Malvankar
Mrs. R. H. Chavan
Mr. R.N. Kamble

Vessel Staff

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Mr. Josey Jacob

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Mate (T-II-3)

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Mr. S.L. Mungekar
Mr. A.P. Dhawde
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Cook

Mr. Kamaraju

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Mr. Ayubkhan Bijali (Gr. IV)
Mr. G.G. Zendeekar (Gr. II)
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Mr. S. Kannappan
Mrs.Arпита Sharma
Dr. Parimal Sardar

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Mr. Rakesh Kumar
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Mr. S. K. Sharma
Mr. R.K. Biswas
Mr. A.K. Mondal

T-1-3
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Mr. S.K. Das, Engine Driver

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Mr. T.K. Ghosh, Driver
Mr. M. Satyanarayana, Driver

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Ms. Kaberi Biswas,

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Mr. T.C. Balmiki, Gr.III
Mr. Manju Paul, Gr.III
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Mr. P. Satyanarayana
Mr. K. Radhakrishna Reddy
Mr. Ravi Shankar Patnaik
Mr. B. Krishna Rao

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Mr. Y.S. Murthy

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Mr. P. Venkata K. Reddy, Gr. I
Mr. P. Dora Reddy, Gr. I
Mr. Shaikh Valisha, Gr. I
Mr. A. Lakshman Reddy, Gr. I
Mr. S. Subba Reddy, Gr. I
Mr. Y. Batchilingam, Gr. I
Mr. M. Govindu, Gr. I
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Mr. A. Gurriah, Gr. I
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T-6
Dr. C.S. Chaturvedi,
Dr. (Ms.) Zeba Jaffar

T-5
Mr. S.P. Singh
Mr. A.K. Yadav

T-4

Mr. S.K. Upadhyay
Mr. Mohmood Gayas

T-3

Mr. Ravi Kumar
Mr. S.K. Singh

T-1

Mr. Om Prakash
Mr. P.C. Jaiswar
Mr. Ram Bharosi

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Mr. Jogendra Singh

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Mr. P.K. Awasthi

Junior Clerk

Mr. P.C. Verma

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Mr. Anwar, Gr. I
Mr. Sajivan Lal, Gr. I
Mr. J.N. Tiwari, Gr. I
Mr. Mahesh Chand, Gr. I
Ms. Kamla Jai Kishore, Gr. I
Mr. Vinod Kumar, (Cook) Gr. I

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Dr. Somdutt (Officer In-charge)
Mr. S.S.H. Razvi

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Mr. K.B.S. Murthy,
Mr. V. K. Tiwari (On study leave)

T-5

Mr. R.K. Upadhyay

Technicians-T-4

Mr. Vijay C. Dubey

T-II-3

Mr. L.P. Bamalia

T-2

Mr. Gurbachan Singh

T-1

Mr. Anup Singh

Administrative Staff

Assistant
Mr. J.R. Jaiswar,
Ms. Asha Dhurve

Supporting Staff

Grade (II)
Mr. Hari M. Potpose,
Mr. Lallu Prasad
Mr. Vishnula
Mr. Mangali Prasad
Mr. Surendra Kumar
Mr. Hari Singh

Grade (I)

Mr. Ram Kewal Prasad
Mr. Raghuvir Prasad
Mr. Ram Swaroop
Mr. Manoharlal
Mr. Shambhu Dayal
Mr. Satyander Prajapati

CIFE Centre

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Haryana 124 411
Phone: 01258-85506

Scientist-SS

Dr. A.K. Jain (Officer In-charge)
Mr. N. K. Chaddha (On study leave)

Technical Officers T-7

Dr. M. Ali

T-II-3

Mr. Hasan Javed
Mr. Sanjeevan Kumar

T-1

Mr. K. Dhana Raju
Mr. Kishan Kumar

Administrative Staff

Mr. V.K. Sinha, Sr. Clerk

Supporting Staff

Mr. Gyani Ram, Gr. I
Mr. Gyan Chand, Gr. I
Mr. Lavesh Kumar, Gr. I

15.2 Promotions

S.No.	Name	From	To
1.	Mr. S.K. Pandey	T-5	T-6
2.	Mr. G.K. Rao	T-5	T-6
3.	Mr. R.K. Upadhyay	T-4	T-5
4.	Mrs. S. Gajbhiye	T-II-3	T-4
5.	Mr. J.M. Koli	T-II-3	T-4
6.	Mr. L.P. Bamalia	T-II-3	T-4
7.	Mr. A.N. Sable	T-2	T-I-3
8.	Mrs. Sandhya R. Wadhavkar	U.D.C.	Assistant
9.	Mrs. Deepika Behl	U.D.C.	Assistant
10.	Shri. C.N. Sahani	L.D.C	U.D.C
11.	Mrs. Swati Koli	L.D.C	U.D.C
12.	Mrs. V.D. Misale	SS.Gr.(IV)	T-I
13.	Mr. M. B. Waghela	SS.Gr.(II)	LDC
14.	Mr. V.K. Bhawe	SS.Gr.(II)	T-I

15.2 Transfers

S.No.	Name	From	To
1.	Dr. R.C.Das Principal Scientist	CIFE Centre, Mumbai	CIFE Centre, Kolkata, (W.B)
2.	Dr. A.K.Jain Scientist	CIFE Centre, Mumbai	CIFE Centre, Rohtak, Haryana
3.	Mrs.Asha. T. Landge Technical Officer, (T6)	CIFE Centre, Kakinada	CIFE, Mumbai
4.	Shri. Amit Singh Bisht T-II-3 Library Asstt	CIFE, Chinhat Centre	CIFE, Mumbai
5.	Shri. Mohammad Baquar	CIFE, Chinhat Centre	CIFE, Mumbai

Consequent upon his selection as Senior Scientist (Agricultural Extension) in National Academy of Agricultural Research Management Dr.Bharat S. Sontakki was relieved from CIFE on 20th May, 2000.

15.3 New appointments



Dr. S.Ayyappan, Director, Central Institute of Freshwater Aquaculture took over as Director of CIFE, Mumbai on 16 June, 2000. A product of College of Fisheries, Mangalore, Ayyappan is a distinguished fisheries scientist of international stature. He has more than 100 publications to his credit. He has won many honours and awards including Zahoor Qasim Gold Medal 1996-1997, Special ICAR Award 1997, Zoological Society of India Gold Medal 1998, ICAR Award for Team Research for 1997-98.

S. No	Name	Date	Posting at
1.	Shri. Sandeep J. Akare, Scientist	24.10.2000	CIFE HQ
2.	Dr. P. K. Ghosh, Senior Scientist	23.10.2000	CIFE Kolkata Centre
3.	Ms. Arpita Sharma, Scientist	4.11.2000	CIFE Kolkata Centre

15.4 Retirement

Mr. Indersingh Gussain, SS.Gr.III retired upon superannuation on 30.11.2000

15.5 Obituary

CIFE mourns the sad demise of Mr. N. M. Zendekar, Bosun, MFV Narmada on January 10, 2001

संक्षिप्त प्रतिवेदन

संस्थान के मुख्यालय तथा इसके केन्द्रों व केन्द्रीय समुद्रीय मत्स्य अनुसंधान संस्थान, कोच्ची, केन्द्रीय मत्स्य प्रौद्योगिकी संस्थान, कोच्ची तथा केन्द्रीय मीठाजल जीवपालन संस्थान, भुवनेश्वर में विभिन्न शैक्षणिक कार्यक्रमों के अंतर्गत चलाए जाने वाले स्नातकोत्तर व डाक्टरेट स्तर के कार्यक्रम सफलतापूर्वक चल रहे हैं। इस वर्ष 42 छात्रों ने एम.एफ.एस.सी. के विभिन्न कार्यक्रमों व सफलतापूर्वक पूर्ण किया। पी.एच.डी. पाठ्यक्रम के अंतर्गत 2 छात्रों को मेरीकल्वर तथा 1 छात्र को मत्स्य श्रोत प्रबंध में उपाधि प्रदान की गई। 41 प्रशिक्षणार्थियों ने आंतरस्थलीय मत्स्य विकास तथा प्रशासन में पी.जी. प्रमाण पत्र पाठ्यक्रम पूर्ण किया। 4 छात्रों को एम.एफ.एस.सी. कार्यक्रमों में प्रवेश दिया गया तथा 3 पी.एच.डी. कार्यक्रमों के अंतर्गत 14 छात्रों का पंजीकरण किया गया। इसके साथ ही 30 प्रशिक्षणार्थियों को पी.जी. प्रमाण पत्र पाठ्यक्रम के लिए कोलकत्ता केन्द्र में नामित किया गया।

सी.ए.एस. में मात्स्यिकी विज्ञान के अंतर्गत 4 प्रशिक्षण कार्यक्रम आयोजित किए गए, जिसमें विभिन्न अनुसंधान संस्थान तथा विश्वविद्यालयों से कुल 60 लोगों को प्रशिक्षित किया गया। इस वर्ष 10 अतिथि व्याख्यान संचालित किए गए तथा इस संस्था के वैज्ञानिकों ने अन्य संस्थानों में 15 व्याख्यान दिए।

संस्थान की अनुसंधान परियोजनाओं के अंतर्गत 28 परियोजनाओं तथा 13 बाह्य परियोजनाओं पर कार्य हो रहा है। मत्स्य अनुसंधान उपलब्धियों में लेटस केलकरीफर, चैनोस चैनोस तथा मालेगांव क्षेत्र के उल्लास नदी व मुंबई के आसपास के क्षेत्रों प्रदूषण स्तर का अध्ययन, जैली मछली से विष निकालने की विधि तथा परिवेशी मछलियों के साथ कलकरोफर का सफलतापूर्व संवर्धन करना, मत्स्य आहार का मूल्यांकन तथा सीबॉस का सफलतापूर्व संवर्धन आदि अनुसंधान कार्य किया जा रहा है।

अलग-अलग समय पर 13 अल्पकालीन प्रशिक्षण कार्यक्रम आयोजित किए गए तथा कुल 187 प्रशिक्षणार्थियों प्रशिक्षित किया गया। प्राथमिक से लेकर स्नातक व स्नातकोत्तर स्तर के 672 छात्र व कृषक इस वर्ष संस्थान में आए। अन्य विस् कार्यक्रमों के अंतर्गत 2 मत्स्य कृषक सम्मेलन, 7 प्रदर्शनी तथा 2 रेडियो वार्तालाप आदि आयोजित किए गए। इस साल बड़ी सं में विस्तार प्रकाशनों का विमोचन किया गया।

पुरस्कार

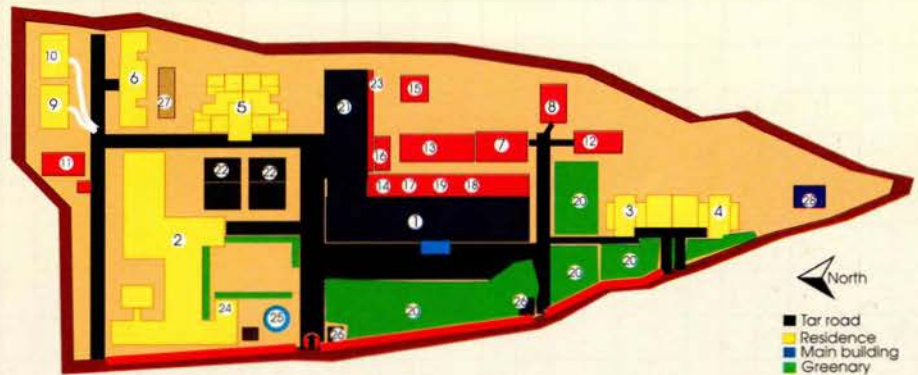
डा. एस. अय्यप्पन व उनकी टीम को भा.कृ.अनु.प. द्वारा टीम अवार्ड प्रदान किया गया। डा. एस.सी. मुखर्जी, सं निदेशक को नेचर कन्जरवेटरस का फैलोशिप प्राप्त हुआ। 3 अन्य फैलोशिप डा. आर.सी. दास, प्रधान वैज्ञानिक, डा. पर सरदार, वैज्ञानिक तथा डा. पानीप्रसाद, वैज्ञानिक को प्राप्त हुए। सभी केन्द्रीय सरकारी कार्यालयों में हिन्दी में सबसे अच्छे क लिए मुंबई की आशीर्वाद संस्था ने इस संस्थान को अवार्ड प्रदान किया। इसी के साथ भारतीय कृषि अनुसंधान परिषद ने भी सं को राजभाषा का राजर्षि टंडन अवार्ड प्रदान किया। के.म.शि.सं. के खिलाड़ियों ने सी.एस.डब्ल्यू.आर.आई., अविकान भा.कृ.अनु.प. के अंतरसंस्थागत खेलकूद प्रतियोगिता में भाग लिया। श्रीमती स्मिता नायर को सबसे अच्छी महिला खिलाड़ी ६ किया गया।

इस साल संस्थान ने 4 पुस्तकों, 4 विस्तार पुस्तिकाओं, 3 पत्रिकाओं, 8 प्रशिक्षण मैनुअल्स तथा एक आडियो (मराठी) का विमोचन किया। संस्थान के संकाय ने 10 लोकप्रिय लेख, 33 वैज्ञानिक पेपर तथा 131 पेपर विभिन्न सेमि संगोष्ठियों में प्रस्तुत किए। संस्थान ने 2 राष्ट्रीय सेमिनार व 1 ग्रीष्मकालीन स्कूल, 1 ब्रेन स्टोर्मिंग तथा 2 राष्ट्रीय संगोष्ठी का आ किया। के.म.शि.सं. में आयोजित भा.कृ.अनु.प. के अंतरक्षेत्रीय खेलकूद प्रतियोगिता में 35 संस्थानों ने भाग लिया।

संस्थान के आधारभूत विकास में विभिन्न प्रयोगशालाओं का आधुनिकीकरण तथा सूचना व सेवा केन्द्र परिचय ए दर्शन की स्थापना की गई।

CIFE Campus (Existing)

Not to scale



Numerical key to buildings

1. Type I quarters G+2
2. Type II quarters G+2
3. Gymnasium
4. Type IV quarters G+2
5. Pump room
6. Hostel (G+2)
7. Transit building
8. Badminton courts
9. Canteen
10. Well
11. CIFE main building (G+2)
12. Workshop , Store & Accounts
14. Algae/ seaweed culture lab
15. Aquaculture instruments lab
16. Feed room
17. Wet lab (being constructed)
18. Aquaculture faculty room
19. Soil and water analysis lab
20. Aquaculture lab
21. Ornamental fish breeding lab
22. Hatchery unit
23. Nutrition lab. and Water tank
24. Centre For Southern Ocean Fisheries
25. Director's Residence
26. Dolphin guest house
27. Security
28. Electrical substation
13. Garden



National Fisheries University



Centres

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