



Director's Column



The current period assumes great importance as it coincides with beginning of XII Five Year Plan. Number of deliberations took place during last year to formulate Draft of Planning Commission document for fisheries and aquaculture development during XII Plan. The research programmes of CIFRI for the plan were prioritized through a National Consultation at Barrackpore. The research focus of the institute was broadened from fish based research to Natural Resource Management. Therefore, the institute has to gear up to address new challenges in inland fisheries research and development.

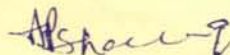
The small and medium-sized indigenous fish species are extremely important for the poorest and vulnerable section of society. It forms major source of food and nutritional security for

them. CIFRI estimated the nutrient composition of some of these fishes collected from Bramhaputra river. It was found that these fish species are rich in crude protein (11-19%) and minerals (2.18 to 8.03% ash) and have moderate quantity of fats (2.33 to 12.5%). A model developed for Karapuzha reservoir described its food web and trophic flows using 15 ecological groups and identified the reservoir at low degree of maturity. CIFRI investigations confirmed pouring of endosulfan formulations in large quantity for mass fish mortality in two kilometer stretch of the river Karola from Dinbazar to King Sahebarghat in West Bengal. The optimum stocking density of *Cirrhinus mrigala* fry has been standardized (300 fry/ m³) for cage aquaculture in Charan *beel* in Assam considering the growth and survival. CIFRI also studied the habitat variables, biotic communities and fisheries of Takmu and Ungamlen *pats* (floodplain wetlands) in Manipur. Web-based GIS maps were prepared for showing distribution of fish species in major rivers of North and South India. Fish species database for 60 families belonging to 14 orders has also been prepared. During this period CIFRI discovered two new aquatic species, *Pinniwallago bhagirathiensis* sp nov. (fish), and *Macrobrachium hooghliense* sp nov. (prawn) in Bhagirathi river. The holotypes have been deposited with the Zoological Survey of India, Kolkata. Similarly, a sea horse, *Hippocampus kuda*, an endangered fish species in Schedule – I of Indian Wildlife (Protection) Act, 1972, was reported for the first time in riverine section of the Hooghly estuary.

Institute scientists have published many research papers, two training manuals, one compendium and one technical bulletin. The institute successfully organized Winter School, Workshop of CIFRI/CDA – ICZM consultancy project, RFD nodal officers meeting, Consultation on fisheries and aquaculture of Hilsa, Inception workshop on 'Scientific Fisheries Management of Wetlands and Reservoirs of NE Region, besides the regular meetings of RAC, IRC and IMC. The institute celebrated with great enthusiasm the Republic Day, CIFRI Foundation Day, Sunderban Day and *Golden Jubilee of Bangalore Research Centre*. The Hon. DG, ICAR launched a mobile research laboratory under NICRA project and inaugurated Biochemistry Laboratory. All the events were grand success and highly appreciated by the participants. Number of training programmes, mass awareness campaigns and exhibitions were also conducted across the country. Few of CIFRI scientists were honored at different fora, while many of the staff members got promotions and transfers. One scientist and Administrative Officer have joined the institute. I cordially welcome them and wish good luck. However, number of scientific, technical and administrative staff superannuated during the period. We wish all of them happy post retirement life.

Any suggestions from our learned readers for improvement of this Newsletter would be highly appreciated.

Barrackpore,
August, 2012



A. P. Sharma

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Research Highlights

CIFRI developed the Food-web model

A food-web model was developed for Karapuzha reservoir in the Wayanad District of Kerala using 15 ecological groups to describe the food web and trophic flows. The Tilapia - *Oreochromis mossambicus*, the most dominant fish in the reservoir ecosystem, was observed to play important ecological role and have evolved as important fisheries. The fishery is generally targeted towards the tilapiine population. Lindeman spine analysis revealed trophic pathways up to five levels in the model. The trophic aggregation routine showed that most of the biomass and flows were concentrated in trophic levels II and III. Biomass associated with the highest trophic levels (TL IV and V) were very small, 0.733 and 0.35,1 respectively. The energy flows are concentrated in the lower part of food web. The mixed trophic impact matrix indicated only fractional changes in biomass of *Clarias gariepinus*. It would have negative effects upon eels and snake heads. Similarly small changes in *O. mossambicus* biomass also had negative impact on planktivorous fishes. The gross efficiency was lower for Tilapia, Minnows, Eels and crustaceans, because of the low quality/density of their preferred prey. It is generally much lower than 1.0. For the Karapuzha model the value obtained was 0.1944 indicating a fishery in the middle of the food chain. Eels have negative impact on most of the fish groups and even the aquatic birds. The network summary statistics computed for the model suggested an overall picture of the Karapuzha reservoir as a system of a low degree of maturity.

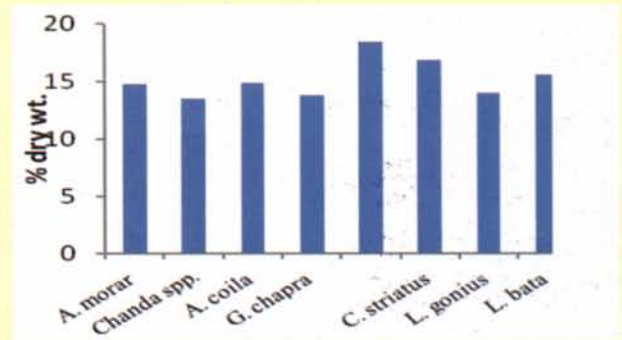


P. Panikkar, M. F. Khan and B. C. Jha

Proximate composition of indigenous fishes from river Brahmaputra

The people of Northeastern India relish small and medium-sized indigenous fish species of river Brahmaputra. Proximate nutritional values of these indigenous fishes was assessed. Samples of *Aspidoparia morar*, *Chanda* spp., *Ailia coila*, *Gudusia chapra*, *Anabas testudineus*, *Channa striatus*, *Labeo gonius* and *Labeo bata* were collected from Uzanbazar (Guwahati) during October to December, 2010. Among the species, *A. testudineus* had significantly higher ($P < 0.01$) protein (18.38% on dry weight basis), lipid (12.48%) and ash (8.03%) contents together with lowest moisture content (59.79%). *C. striatus* also had higher protein content (16.78%) compared to the other species. Proximate composition of different sizes of *A. morar*, *Chanda* spp. and *A.*

coila were compared. Moisture content decreased with increasing size in all the three species with just the opposite trend in case of lipid content. However, protein contents were similar except in case of *A. coila*, where larger fishes showed significantly ($P < 0.01$) higher protein content. It could be concluded that the selected small indigenous fish species are a rich source of protein (11-19% crude protein), moderate quantity of fats (2.33 to 12.5%) and also rich in mineral contents (2.18 to 8.03% ash).



Crude protein content (% dry wt.) of the different fish species

D. Debnath, S. Yengkokpam, B. K. Bhattacharjya, K. K. Sarma, P. Gogoi and A. Kakati

CIFRI solved the mystery of mass mortality of fishes in Karola river, West Bengal

The fisheries of River Karola, West Bengal provides valuable food and livelihood security to a sizeable population of the Jalpaiguri district. During November, 2011, mass fish mortality occurred in a two kilometer stretch from Dinbazar to King Sahebarghat. Investigation was conducted by a team of Scientists from CIFRI to ascertain its causes.



The analysis revealed that physico-chemical properties of water samples were absolutely normal and also no microbial infection or abnormality was observed. There was also no abnormal concentration of heavy metal elements like Fe, Zn, Cu, Mn, Cd and Pb in the water or in fish tissues. However, analysis for pesticide residues revealed presence of a high concentration of endosulfan, an organochlorinated cyclodiene group of insecticide and well known fish poison. The concentration of total endosulfan in water went up to 0.113 mg/l, while in fish tissues it was as high as 22.8 mg/kg. The water samples collected from upstream and downstream stretches of the affected area were free from any endosulfan residues. Thus, it established pouring of large quantity of endosulfan formulations into this stretch to get huge catch. The institute submitted report to the State Fisheries Department with recommendations for restoration of fisheries in the river.

S. Samanta, M. A. Hasan, S. K. Nag and B. K. Behera





Stocking density of *Cirrhinus mrigala* fry in floating net cages has been standardized

A cage culture experiment was conducted in Charan beel, Morigaon district, Assam for standardizing stocking density of *Cirrhinus mrigala* fry. A battery of twelve cages (2x2 x2 m³) were stocked with *C. mrigala* fry (av. length 4.18 ± 0.07 cm, av. weight 0.71 ± 0.03 g) at six different stocking densities, viz. 50, 100, 150, 200, 250 and 300 fry/m³ with two replicates each. Reared fishes were fed twice daily with a formulated mashed feed (34.61% CP) for three months. The feed was formulated using fish meal (10%), soyabean meal (25%), mustard oil cake (25%), rice bran (20%), wheat flour (6%), wheat bran (12%) and vitamin mineral mixture (2%). It was found that the stocking densities of 100 and 150 fry/m³ yielded better growth performance compared to other groups in terms of final weight, weight gain percent (WG) and specific growth rate (SGR). Higher stocking density of 250 and 300 fry/m³ had statistically similar growth performance as that of the lowest stocking density (50 fry/m³). Feed efficiency ratio (FER) and protein efficiency ratio (PER) showed the same trend as that of growth. Stocking density had some adverse effect on the survival of the reared fish with the highest survival observed in stocking density (50 fry/m³). Statistically, survival in lowest stocking density was not significantly different to that of 100 and 200 fry/m³. Survival in 250 and 300 fry/m³ was also not statistically different. Considering the growth and survival, the highest stocking density tested in the experiment i.e., 300 fry/m³ may be considered optimal for rearing *C. mrigala* fry in Charan beel.

D. Debnath, B. K. Bhattacharjya, S. Yengkokpam, A. K. Yadav, K. K. Sarma, P. Gogoi and A. Kakati

Habitat variables, biotic communities and fisheries in Takmu and Ungamlen *pats* of Manipur

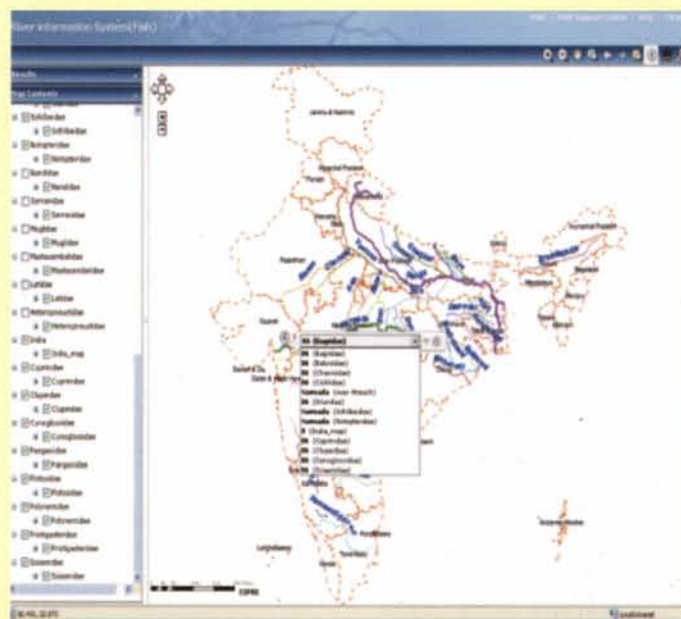
Habitat variables, biotic communities and fisheries of Takmu and Ungamlen *pats* (floodplain wetlands) of Bishnupur district, Manipur were studied. Takmu *pat* was under the administrative control of the Department of Fisheries, Government of Manipur, was moderately infested with aquatic macrophytes (app. 15%) mainly with water hyacinth. Some of the edible aquatic plants having economic importance to human beings were *Zizania latifolia*, *Carex* sp., *Saccharum* spp., *Setaria pumila*, *Alpinia nigra*, *Hedychium spicatum*, *Narenga*, etc. These are usually associated with floating mats (phumdis) in the *pat*. Other non-phumdi edible plants were water chestnut (*Trapa natans*) and Makhana (*Euryale ferox*). The water quality parameters indicated water temperature (27.8-28°C), Secchi disc visibility (85-95 cm), pH (6.6-6.8), DO (6.8-7.4 mg/l), CO₂ (3.8-5.4 mg/l) and alkalinity (28-30 mg/l). Ungamlen lake was moderately infested with water hyacinth (app. 35%). Encroachment of the marginal areas of the *pat* for cultivating paddy, construction of fish and horticulture farms resulted in shrinking of water area of this *pat*. Major economic plants in this

pat were *E. ferox*, *Nelumbo nucifera*, *Nymphaea pubescence*, *Nymphoides indicum*, *T. natans*, etc. The water quality parameters assessed were temperature (27.5-28.2 °C), Secchi disc visibility (83-90 cm), pH (6.7-7.2), DO (6.3-7.1 mg/l), CO₂ (4.2-6.0 mg/l) and alkalinity (25-30 mg/l). In both the wetlands, the fisheries comprised of common carp, grass carp, bighead carp, tilapia, IMCs and other small indigenous fishes. Some of the indigenous fishes with low abundance in both the *pats* were *Anabas testudineus*, *Anguilla bengalensis*, *Acanthophtalamus punctatus*, *Channa orientalis*, *Botia bagarius*, *Barilius dogarsinghi*, *Garra graveli*, *Ompok bimaculatus*, *Osteobrama belangeri* (artificially stocked by the Fishery Department in Takmu *pat*), etc.

S. Yengkokpam, D. Debnath and B. K. Bhattacharjya

CIFRI developed Fish species distribution map of rivers

Major rivers of Northern and penninsular India, namely, Ganga, Yamuna, Chambal, Betwa, East Banas, Sone, Ken, Rupnarayan, Ajay, Subarnarekha, Kangsabati, Tapti, Narmada, Godavari, Krishana, Kaveri, Tawa, Tungbhadra, Hemawati, Mahanadi, Pennar and Subernarekha estuary were delineated using TNT Mips software for preparation of their species distribution map. Fish species database, for 60 families belonging to 14 orders has been developed in MS-Access. In the database most of the species belonged to fresh waters except a few. Database were populated using fish species data for rivers Ganga and Narmada in a stretch-wise manner and for others like Brahmaputra, Kaveri, Krishna and Godavari, river wise. Database was populated from published literature and bulletins of CIFRI. These maps are available on Web-based GIS.



Fish species distribution map

S. K. Sahu, D. Karunakaran, D. N. Jha, A. K. Yadav and S. Majumdar





Discovery of new species of fish and prawn and first record of sea horse species

One fish species, *Pinniwallago bhagirathiensis* sp nov., and one prawn *Macrobrachium hooghliense* sp nov. were described and reported for the first time. The holotypes have been deposited in the National Zoological Collections of the Zoological Survey of India, Kolkata with holotype IDs ZSI FF4488 and ZSI C5914/2 respectively. From Kakdwip area, an endangered sea horse species, *Hippocampus kuda*, (listed in the Schedule – I of the Indian Wildlife Protection Act, 1972) was collected. This is the first record of sea horse from the riverine section of the Hooghly estuary.



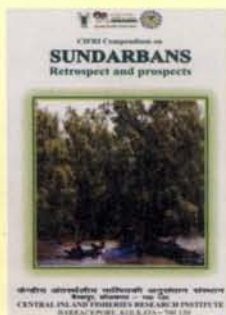
Macrobrachium hooghliense



Hippocampus kuda

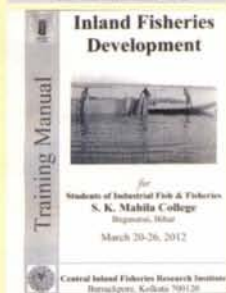
Roshith C. M., R. K. Manna, U. Bhaumik, B. B. Satpathy, A. Roy Chowdhury and A. Mitra

Publications



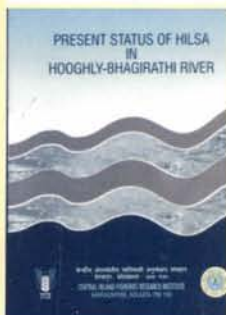
CIFRI Compendium on Sundarban: Retrospect and prospects

The editors A. Sinha, P. K. Katiha and S. K. Das compiles 15 articles on various aspects of Sundarbans and its development strategies. The compendium covered aspects of mangrove structure and functions, environmental sensitivity, faunal diversity and conservation, diversified agriculture, impact and adaptations of climate change, arsenic problem, valuation of goods and services and alternate livelihoods and their sustainability. The compendium was released on the occasion of Sundarban Day, June 3, 2012.



Training Manual on Inland fisheries development

This training manual "Inland Fisheries development" was edited by Ganesh Chandra, M. K. Bandyopadhyay and A. K. Sahoo. This manual was prepared for the students, covering a wide range of topics like potential of wetlands and reservoirs, fish seed production, fish disease management, nutrient requirements of fish, planktons and periphytons, benthos, water and soil quality, integrated fish farming, processing and preservation of the harvested fish, fisheries extension and economics, etc.



Present status of Hilsa in Hooghly-Bhagirathi river

Considering the decline in Hilsa fisheries, it is one of most important issue in fisheries of Indian estuaries. Keeping this fact in mind Utpal Bhaumik and A. P. Sharma portrayed an overview of Hilsa fisheries in the Hooghly-Bhagirathi river systems vis-à-vis conservation strategies in this publication. It was released by Dr. S. Ayyappan, DG, ICAR on June 27, 2012 at CIFRI, Barrackpore. The bulletin is expected to be useful to students, researchers and other concerned agencies towards enrichment of their knowledge besides policy makers to plan effective conservation measures and harnessing Hilsa fishery in sustainable manner.



Piscine Diversity of river Brahmani- A checklist

The river Brahmani is one of the east flowing rivers of India. The Brahmani delta is the site of famous Bhitarkanika wildlife sanctuary. The piscine diversity the river is hardly reported anywhere. To fill this gap, M. K. Das, M. K. Bandyopadhyay, A. P. Sharma, S. K. Paul and S. Bhowmik compiled their observations on fish biodiversity of river Brahmani by collecting fish samples from different river sites and landing centres.





Trainings

Name of the training	Date	Venue	Participants
Fisheries management of floodplain wetlands	January 17-23, 2012	CIFRI Regional Centre, Guwahati	10 students, Industrial Fish and Fisheries, Cachar College, Silchar, Assam
Inland fisheries production and resource management	March 12-17, 2012	CIFRI, Barrackpore	15 ATMA fishers, Samastipur, Bihar
Inland fisheries development	March 20-26, 2012	CIFRI, Barrackpore	21 B. Sc students, Industrial Fisheries, S.K.M.College, Begusarai, Bihar
Inland fisheries production and resource management in Bihar	April 20-25, 2012	CIFRI, Barrackpore	39 fishers, Madhubani, Bihar
Aquaculture management, fish seed raising, wetland management and management of coldwater fisheries	April 23-26, 2012	Kokrajhar, Assam	175 Bodo farmers, Kokrajhar, Assam
Stock assessment of Hilsa	April 30-May 1, 2012	CIFRI, Barrackpore	35 scientists and research scholars, ICAR institutes
Cage and pen culture in open waters for fingerlings and table fish production	May 7-11, 2012	CIFRI, Barrackpore	16 State fisheries officials of Chhattisgarh
Production and management of inland fisheries	May 20-25, 2012	CIFRI, Barrackpore	30 fish farmers, Nalanda, Bihar
Ecosystem modeling for reservoir fisheries management	June 21-27, 2012	CIFRI, Bangalore Centre	2 Scientists, CIFE, Mumbai



Field visit of trainees to Manchanabele reservoir, Karnataka



Certificate distribution to the trainees of Bihar

Trainees from Nalanda district of Bihar



NFDB sponsored training programme at CIFRI, Barrackpore



Bihar fisherman receiving training certificate



Students, trainees of Cachar College, Silchar, Assam





Mass Awareness Campaigns

Name of the Camp	Date	Venue	Participants
Save Hilsa seeds in Hooghly river	January 12, 2012	Bawali, 24-Parganas (South), West Bengal	50 fishers and 60 general public
Conservation need of indigenous wetland fishes	January 07, 2012	Thakurnagar, 24-Parganas (North), West Bengal	60 fishers
Conservation of economically important freshwater fish species	February 22, 2012	Cuttack, Odisha	100 fish farmers
Propagation of inland freshwater ornamental fishes	March 16, 2012	Rajchandrapur, 24-Parganas (North), West Bengal	60 fishers and 20 fisherwomen
Reservoir fisheries development - problems and prospects	March 20, 2012	Wayanad, Kerala	400 fishers
Reservoir fisheries management and cage culture in association with Department of Fisheries, Govt. of Karnataka	March 20, 2012	Mallaghatta Reservoir, Tumkur, Karnataka	30 fishers
Conservation of small indigenous inland water fishes	April 15, 2012	Jagulipara, Burdwan, West Bengal	60 fishers
Fisheries management in large inland wetlands	May 30, 2012	Taldi, 24-Parganas (South), West Bengal	50 fish farmers
Conservation of small indigenous fishes in oxbow lakes	June 20, 2012	Bhomara beel, Nadia, West Bengal	60 fishers
Restoration of Hilsa fishery in Hooghly river	July 25, 2012	Netajinagar, Hooghly, West Bengal	100 fishers and 30 fisherwomen



Awareness programme on reservoir fishery development



Mass awareness camp at Taldi, 24 Parganas(South), W.B.



Mass awareness campaign for conservation of Hilsa fishery





Exhibitions

Name of the exhibition	Date	Place
<i>Puspa, Krishi-O-Silpa Mela</i>	January 7-16, 2012	Thakurnagar, 24-Parganas (North), West Bengal
<i>Monmohan Mela –O-LokoSanskriti Utsav</i>	January 8-15, 2012	Chotojagulia, 24-Parganas (North), West Bengal
SAFE Agri Mela 2012	January 14-17, 2012	Satjelia Village (Sunderbans), 24-Parganas (South), West Bengal
<i>Subhas Mela 2012</i>	January 23-29, 2012	Taldi, 24-Parganas (South), West Bengal
Fish Festival	January 27-29, 2012	Raipur, Chhattishgarh
Fish Festival	February 4- 6, 2012	Bhopal, Madhya Pradesh
North East Agricultural Fair	February 10-12, 2012	Guwahati, Assam
Agricultural Scientists and Farmers Congress Exhibition (BIOVED)	February 18-19, 2012	Allahabad, Uttar Pradesh
Eastern Zone Regional Agricultural Fair	February 21-23, 2012	Cuttack, Odisha
<i>Pusa Krishi Vigyan Mela</i>	February 29- March 04, 2012	New Delhi
Challenges and Opportunities in Aquaculture	March 16-17, 2012	Bhubaneswar, Odisha
IIVR Exhibition	March 17, 2012	Varanasi, Uttar Pradesh
AQUASHOW	March 19-21, 2012	Wayanad, Kerala



District Collector visits CIFRI Stall (Wayanad, Kerala)

CIFRI Stall at Wayanad, Kerala

CIFRI Stall at Gokhale Road, Kolkata

Awards/Recognitions



Dr Utpal Bhaumik, Head, Riverine Ecology and Fisheries Division and **Dr K D Joshi**, Principal Scientist & Head, Allahabad Regional Centre of Central Inland Fisheries Research Institute received Fellowship award of the Bioved Research Institute of Agriculture & Technology, Allahabad in its 14th Indian Agricultural Scientists & Farmers Congress held at SIEMAT, Allahabad from February 17-18, 2012.



Dr B P Mohanty, Senior Scientist chaired a Session in the World Congress on Biotechnology 2012 at Leonia International Convention Centre, Hyderabad on May 4-6, 2012. Dr Mohanty also delivered a talk on 'Application of proteomics for identification of species-specific peptides for fish food authentication' on the occasion.





Superannuations

Name & Designation	Last Place of posting	Date of superannuation
Dr. A. K. Chattopadhyay, T-8	CIFRI, Kolkata	January 31, 2012
Shri M. Mahadeva, SSS	CIFRI, Bangalore	January 31, 2012
Shri P. P. Ghosh, LDC	CIFRI, Barrackpore	January 31, 2012
Shri I. R. Balmiki, SSS	CIFRI, Barrackpore	January 31, 2012
Shri G. Pathak, T-9	CIFRI, Barrackpore	February 29, 2012
Shri H. C. Banik, T-5	CIFRI, Barrackpore	February 29, 2012
Ms. Anjali Neogi, Assistant	CIFRI, Barrackpore	February 29, 2012
Shri Ananda Biswas, SSS	CIFRI, Barrackpore	February 29, 2012
Shri Rajendra Ram, SSS	CIFRI, Barrackpore	February 29, 2012
Shri B. Hazarika, SSS	CIFRI, Guwahati	February 29, 2012
Shri L. K. Halder, SSS	CIFRI, Barrackpore	March 31, 2012
Shri M. Anjanappa, SSS	CIFRI, Bangalore	March 31, 2012
Shri Sukumar Saha, T-7-8	CIFRI, Barrackpore	April 30, 2012
Shri T. K. Roy, Private Secretary	CIFRI, Barrackpore	April 30, 2012
Shri Bablu Mondal, SSS	CIFRI, Barrackpore	April 30, 2012
Shri S. S. Bondre, SSS	CIFRI, Vadodara	May 31, 2012

New Appointments

Name & Designation	Place of posting	With Effect From
Ms Sandhya K.M., Scientist	CIFRI, Barrackpore	May 02, 2012
Shri Navin Kumar Jha, Administrative Officer	CIFRI, Barrackpore	June 12, 2012

Transfers

Name and Designation	From	To
Shri P. K. Nayak, AF & AO	NRC on Pig, Guwahati	CIFRI, Barrackpore
Shri Rajesh Sahay, SFAO	CIFRI, Barrackpore	IIT, Gandhi Nagar
Shri A. K. Yadav, Senior Clerk	CIFRI, Barrackpore	NRC on Litchi, Muzzafarpur
Dr. K. K. Goswami, Principal Scientist	CRIJAF, Barrackpore	CIFRI, Barrackpore
Mr. S. B. Roy, AAO	CIFRI Regional Centre, Guwahati	CIFRI, Barrackpore
Mr. Pronob Das, Scientist	CIFRI, Barrackpore	CIFRI Regional Centre, Guwahati
Mr. S. C. S. Das, Scientist	CIFRI, Barrackpore	CIFRI Regional Centre, Allahabad





Meetings

National Consultation on “Prioritization of research programmes of CIFRI for XII Five Year Plan”



CIFRI organised a 'National consultation on 'Prioritization of Research Programmes of CIFRI for XII Five Year Plan' on January 18, 2012 at CIFRI, Barrackpore. Dr. R. K. Sinha, Chairman, R A C, CIFRI, Barrackpore, Dr. A. G. Ponnai, Director, CIBA, Chennai, Dr. P. C. Mohanta, Director, DCFR, Bhimtal, Dr. P. Das, Former Director, NBFGR, several scientists, fisheries experts, NGO representatives and progressive fishers/fish farmers attended the meeting. The major suggestions included ecosystem based approach for monitoring of the natural ecosystem, generation of water recharge data for rivers and wetlands and estimation of water requirement for sustainable fisheries in important river systems like Ganga and Yamuna. Experts urged upon the scientists to carry out research work on environmental flow, restoration of rivers, wetland river connectivity, fish taxonomy, hydro-geo-morphology, hydrodynamics, sustainable fisheries enhancements in reservoirs and wetlands, fish behaviour, institutional arrangements, valuation of goods and services, socio-economics, etc.

Winter School on “Resource and environment assessment through remote sensing and GIS”

The institute organized a 21 days Winter School on 'Aquatic inland resources and environment assessment through RS and GIS application' during 10-30 January, 2012. Twenty five participants from various universities, research institutes, state departments across the country had participated. The

scope, applications and intricacies of GIS and remote sensing formed the content of winter school. Many senior level scientists and academicians from the Institute and other institutions were the resources persons. They included Prof. R. K. Sinha, Dean, Environmental Sciences, Central University, Patna, Prof. Dillip Kumar, Chairman, Working Group of fisheries, Planning Commission, Dr. D. Dutta, Coordinator, Regional Remote Sensing Center (RRSC), Kolkata, Prof. Sugata Hazra, Director, Oceanography School, Jadavpur University, etc. In the valedictory function, Vice chancellor of Ramakrishna Mission Vivekananda University addressed the participants and distributed the certificates.



Launching Workshop of CIFRI/CDA – ICZM Consultancy Project

The institute organised the launching Workshop of CIFRI/CDA-ICZM Consultancy Project on “Post-restoration assessment of ecology and fisheries diversity of Chilika lake” on February 10, 2012 at Barrackpore. The workshop was attended by



representatives from Chilika Development Authority and CIFRI. Dr. A.K. Pattnaik, Chief Executive of the Authority made a presentation to flag the issues. Dr. V. R. Suresh presented the project work plan. The modalities and proposed research work was discussed in the meeting. Prof. A. P. Sharma and Dr. B. C. Jha gave their expert comments on the project and its implementation.

RFD nodal officers meeting

The RFD nodal officers of all institutes of Fisheries Division participated in a meeting organised on February 22-23, 2012. Dr. B. Meenakumari, DDG (Fy) presided over the meeting. Dr. Madan Mohan, ADG (M. Fy) and Shri Anil Agarwal, Principal Scientist, Fisheries Division, ICAR, New Delhi also participated in the meeting. The meeting focused on the finalisation of XII Plan RFD document of ICAR Fisheries Division.



International Consultation Meeting on Hilsa

First consultation meeting on “Norway-India-Bangladesh Consortium for Hilsa Aquaculture in South Asia” was organized at CIFRI, Barrackpore on March 5, 2012. The meeting was attended by Dr. Rama Bangera from Nofima, Norway, Dr. Arun Padiyar from Aquaculture Industry, India and CIFRI staff including Prof. A. P. Sharma, Dr. Utpal Bhaumik, Dr. B. K. Behera and Dr. A. K. Sahoo. Dr. Michael Phillips from Worldfish Centre, Malaysia, Dr William Collis, Country Director, Worldfish Centre, Bangladesh, Dr Velmurugu Puvanendran from Nofima, Norway and Dr. Anisur Rahman from Bangladesh Fisheries Research Institute, Bangladesh participated in the meeting through Skype teleconference. Different issues related to Hilsa aquaculture, viz. breeding and seed production, food and feeding, aquaculture, genetics and market potential etc. were discussed for preparation of Dhaka Workshop, Bangladesh.





Research Advisory Committee Meeting

The Research Advisory Committee for the year 2012 met during 06-07 April, 2012 at CIFRI, Barrackpore. Under the chairmanship of Dr. R. K. Sinha. The committee suggested to develop appropriate technologies and package of practices to cater to the need of various stakeholders. He also urged to modify and initiate programmes to face the challenges during the XII Five Year Plan. Dr. S. D. Singh, ADG (I. Fy). ICAR, stressed upon the sustainability of technologies. Prof. A. P. Sharma, Director assured the house that the recommendations will be implemented.

Brainstorming session on Sunderbans



A brainstorming session was organized in Sunderbans at Pakhirala, Sajnekhali, on April 08, 2012 on Mangrove and Fisheries of Sunderbans. The programme was attended by many renowned scientific personnels like Prof. R. K.

Sinha, Dr. P. Nautiyal, Dr. W Viswanath, Dr. L. L. Sharma and Dr. S. D. Singh. Prof. A. P. Sharma, Director, CIFRI and Heads of Divisional and Regional Centres of CIFRI. Several problems like destruction of juveniles, siltation, destruction of mangroves for tourism or aquaculture, recurring cyclonic storm, killing of fishermen by wild animals, etc were highlighted. The in depth studies on organic matter in water along with detrital food chain dynamics, role of mangrove as nursery ground of fish and prawns and socio-economic status of fishers were suggested. Director CIFRI desired to have biodiversity of estuaries on GIS platform. He also opined for a collaborative study on this mangrove ecosystem with other organizations.

Institute Research Committee Meeting



The annual meeting of IRC was held during April 09-11, 2012 at Barrackpore. Prof. A. P. Sharma, Director presided over the meeting. Dr. S. D. Singh represented the ICAR Fisheries Division in the meeting. All the Heads of

Division and scientists participated in this important meeting. Since this IRC meeting was the last meeting of the XI Five Year Plan, the Chairman requested all the project leaders to present the achievements of XI plan. Scientists also presented their future work plans and proposed projects for XII plan.

Authors workshop on 'Ecosystem health of major rivers of India'

India is endowed with rich water resources. Among them, the river Ganga occupies a unique position in history, culture, religion and civilization of the Indian subcontinent. However, data available on

fishes, fisheries and health of these rivers are fragmented and scattered. A concerted efforts to collect, compile and integrate the available data on the major rivers of India are being felt necessey. In this direction an authors workshop on 'Ecosystem health of major rivers of India' was organized jointly by CIFRI and Aquatic Eco-System Health and management Society, Canada at Barrackpore on April 22 – 23, 2012. As a result of this workshop several papers were submitted to the AEHMS for peer reviewed publication.



Inception workshop on 'Scientific fisheries management of wetlands and reservoirs of NE Region'

CIFRI Regional Centre, Guwahati organized an Inception workshop on 'Scientific Fisheries Management of Wetlands and Reservoirs of NE Region' at Guwahati on June 20, 2012. The basic objectives of the workshop were to prepare an action plan for scientific management of



selected wetlands and reservoirs of the Northeast region as well as development/ refinement of model for pig-cum-fish farming through active collaboration of various related agencies. Prof. A. P. Sharma, Dr. B. C. Jha, of CIFRI, Barrackpore, Dr. M. Sinha, Advisor, Department of Fisheries, Govt. of Tripura, Dr. A. K. Roy, IAS, Secretary (Fisheries), Govt. of Assam were among the speakers on this occasion. It was felt that effective dissemination of CIFRI technologies/ management guidelines could bring appreciable changes in fish productivity scenario of NE region with effective collaboration among various stakeholders. Prof. Sharma requested all the stakeholders (State Fisheries Departments, AFDC, College of Fisheries, Lembucherra) to bring in synergy for making effective and functional partnerships with community participation to achieve tangible results. Directors/ officials of State Fisheries Departments of Arunachal Pradesh, Meghalaya, Manipur, Assam and Tripura, BTC, AFDC and a few farmers were also expressed their views in the meeting.

Consultation on fisheries and aquaculture of Hilsa

A National Consultation was organized at Barrackpore on "Fisheries and aquaculture of Hilsa" on June 27, 2012. Dr S Ayyappan, Director General, ICAR was present in the consultation. In addition, various experts of fisheries and aquaculture like Dr. S. D. Singh, ADG (I. Fy), ICAR), Dr. J. K. Jena, Director, NBFGR, Lucknow made valuable contribution to the meaningful conclusion of the consultation.





Events

Blood donation camp



CIFRI Recreation Club organized a free medical and blood donation camp in collaboration with Chitranjan Medical College, Kolkata and BMRC Nursing home, Barrackpore on 6 January, 2012. Twenty seven CIFRI staff and their family members donated blood.

General check up, blood sugar level test and ECG were also done on this occasion.

IMC meeting

The 40th Institute Management Committee (IMC) meeting was organised at CIFRI, Barrackpore on 12 January, 2012. The meeting was attended by all the members of committee including Dr. S. D. Singh, ADG (I. Fy), ICAR, New Delhi. The action taken report of last IMC was presented and the committee expressed satisfaction on the progress. The committee members visited different laboratories and interacted with the scientific and administrative staff of the institute.

Union Minister of State for Agriculture visited CIFRI



Dr. Charan Das Mahant, Hon'ble Minister of State for Agriculture and Food Processing Industries, Department of Agriculture and Co-operation, Ministry of Agriculture, Government of India, New Delhi visited the institute on January 20, 2012. He showed keen interest in

institute research and other activities on reservoir fisheries management, cage and pen culture, mapping of inland water resources, aquatic bio-diversity, fish conservation in natural waters, biotechnology, etc. He interacted with the institute scientists and praised the institute research work and leadership with high words.

Republic Day



The institute celebrated republic day on January 26, 2012 with great fanfare. All the institute staff and their family members attended the function. Prof. Sharma unfurled the National Flag in front of all the staff and their family members. In his motivating speech, Prof. Sharma,

urged the staff to perform their respective duties to their potential. Small cultural programme was also organized on this occasion.

CIFRI Annual Day

CIFRI celebrated its 66th Foundation Day on March 17, 2012 at Barrackpore. A number of events were organized on the



occasion. Dr. Brij Gopal, Coordinator Centre for Inland Waters in South Asia and former Professor Jawaharlal Nehru University, New Delhi was the Chief Guest and key speaker. Dr. Dillip Kumar, Former Vice Chancellor, CIFE, Mumbai, Dr. P. Das Former Director, NBFGR, Lucknow, Dr. S. P. Ayyar and Dr. M.

Sinha, Former Directors of CIFRI Barrackpore were the Guests of honour. The lecture by Dr. Brij Gopal was highly appreciated. The other dignitaries also gave their opinion on R&D in fisheries sector of India. A Brainstorming session was also organized on sustainable inland fisheries.

Golden Jubilee of CIFRI Bangalore Research Centre



The Research Centre of CIFRI, Bangalore celebrated its Golden Jubilee on April 14, 2012 with great enthusiasm and fanfare. Dr. S. Ayyappan, Secretary, DARE and DG, ICAR; Dr. B. Meenakumari, Deputy Director General (Fy), Prof. A. P. Sharma Director,

CIFRI, Dr. C. Vasudevappa, Chief Executive of NFDB, Ms V. Manjula, IAS, Principal Secretary, Department of Animal Husbandry and Fisheries, Karnataka, Ms C. A. Latha, IAS, Director of Fisheries, Kerala, Dr. A. S. Sidhu, Director, IIHR, Dr. P. Jayasankar, Director, CIFA, Dr. K. V. Devaraj, Former Vice-Chancellor, UAS, Bangalore, Dr. P. S. B. R. James, Former Director, CMFRI, Former Directors of CIFRI Dr. S. P. Ayyar, Dr. M. Sinha and Dr. K. K. Vaas, and Dr. D. S. Krishna Rao, Head of Bangalore Centre were among the dignitaries in the function. They shared their experiences in reservoir fisheries research. In his presidential address Dr. Ayyappan reiterated that during XII plan the focus is on natural resource management and efforts should be intensified to increase fish production from reservoirs on a sustainable basis. An interactive session on 'Reservoir Fisheries Development and Aquaculture - Issues and Challenges' was organised by CIFRI and CIFA. Experts from different parts of the country participated actively in the interactions and panel discussions. A number of documents related to the centre were released on the occasion, including its Golden Jubilee logo, Past, Present and Future, Souvenir and Bibliography of Publications.



Exposure visit of Executive members of Thengal Kachari Autonomous council, Assam to CIFRI

Fifteen executive members of Thengal Kachari Autonomous Council of Assam visited CIFRI, Barrackpore on May 3, 2012. Prof. A. P. Sharma, Director along with Heads of Division apprised them about the activities and research achievement of CIFRI including that of Regional Centre, Guwahati. They visited various labs and interacted with scientists.





Sundarban Day

Sundarban Day was celebrated at CIFRI Barrackpore on June 03, 2012 to commemorate the birth day of Sir William Roxburgh, the Botanist par excellence, who worked extensively in Sundarbans. A brainstorming Session on "Sundarbans: Issues and Threats" was organized.



Distinguished Scientists Prof. Dr. Amallesh Choudhury, Prof. C. S. Chakraborty, Vice Chancellor, WBUAFS and Dr. P. Das, Former Director, NBFGR, Lucknow, Dr. A. K. Ghosh, Ex-Director, ZSI, Dr. S. N. Biswas, Deputy Director, State Fisheries Department, Dr. Anindya S. Ghosh, Sunderban Development Board, Dr. Dipankar Saha, NGO, Dr. S. D. Ghosh, Entrepreneur, Dr. B. K. Bandyopadhyay, Dr. Dhiman Burman, CSSRI, Canning, Dr Chand, WBUAFS and several other members of research organisations and NGOs were present. Several new records of fishes in recent studies have been reported by CIFRI. However, participants were concerned about loss of mangroves in increased salinity scenario,

loss of biodiversity, decline in daily income and migration. Co-ordinated approach was emphasized with involvement of different stakeholders for adopting farming System Model and diversification



of agriculture towards wholesome development of Sundarbans. "CIFRI Compendium on Sundarbans - Retrospect and Prospects" was also released on the occasion.

Launching of mobile research laboratory under NICRA project

A Mobile Research Laboratory, was launched under the NICRA project by Dr. S. Ayyappan, Hon'ble Secretary (DARE) and DG (ICAR) on June 27, 2012. This state of the art facility is equipped with essential equipments and facilities like water storage and purifier, long life battery and UPS, generator, fridge, incubator, centrifuge, weighing balance, multiparameter water analyser, UV-Vis spectrophotometer, water and sediment sampler, etc. to perform long field based research. It will enable



scientists to conduct essential tests in field and provide facility for proper storage and analysis of research samples. Prof. A. P. Sharma, Dr. Samir Bhattachariya, INSA Professor, Vishwa Bharati, Kolkata; Prof. Amlesh Choudhary; Dr. M. K. Das, Principal Investigator of the project and scientists of

CIFRI were present on the occasion. The DG (ICAR) also inaugurated the biochemistry lab on same day. He interacted with the institute scientists and inspired them to do quality research to compete with the best in the world.

FISH FACT

Fish do not feel pain as they lack well developed brain system or enough sensory receptors in the nerve cells. Fish do not even suffer when they are hooked and fighting for their lives





हर कदम, हर उमर
किसानों का हमसफर
आधुनिक कृषि अनुसंधान परिधि
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निदेशक की ओर से

आप सभी को नये वर्ष की हार्दिक शुभकामनायें!

अप्रैल 2012 से 12वीं पंचवर्षीय योजना का प्रारंभ हुआ है। इस प्रक्रम में योजना आयोग के उप-वर्ग की कई बैठकों का आयोजन किया गया जिसका उद्देश्य 12वीं पंचवर्षीय योजना में मात्स्यिकी एवं जलकृषि संबंधी प्रलेख को तैयार करना है। राष्ट्रीय परामर्शक दल की बैठक में संस्थान के अनुसंधान कार्यक्रमों की प्राथमिकता निर्धारण की गई। संस्थान के अनुसंधान का लक्ष्य मात्स्यिकी अनुसंधान के साथ प्राकृतिक संसाधन प्रबंधन को भी रखा गया है। अतः संस्थान के समक्ष अंतर्स्थलीय मात्स्यिकी अनुसंधान व विकास संबंधी नई चुनौतियां हैं जिसके लिये संस्थान गंभीरता से प्रयासरत है।

छोटी एवं मध्यम आकार वाली देशी मत्स्य प्रजातियों की मात्स्यिकी में महत्वपूर्ण भूमिका होती है। सभी वर्गों विशेषकर, निर्धन समुदाय के लिये ये प्रजातियाँ सस्ती प्रोटीन की एक उत्तम स्रोत हैं। संस्थान द्वारा ब्रह्मपुत्र नदी में उपलब्ध ऐसी कुछ प्रजातियों के पोषक गुणों का आंकलन किया गया। अनुसंधान में यह पाया गया कि इन प्रजातियों में प्रोटीन 11-19 प्रतिशत (अशोधित), वसा 2.33-12.5 प्रतिशत एवं खनिज तत्व 2.18-8.03 प्रतिशत हैं। वायानाड जिले के कारापुुरा जलाशय

के फूड वेब मॉडेल का विकास पारिस्थितिकी विषय से जुड़े 15 वर्गों द्वारा किया गया है जिसका उद्देश्य ट्रोफिक फ्लो एवं फूड वेब के बारे में सूचना प्रदान करना है। इस दिशा में संबंधित आंकड़ों का मॉडेल यह बताता है कि कारापुुरा जलाशय में मात्स्यिकी एवं विकास की संभावना आशा के अनुरूप नहीं है।

नवम्बर 2011 में पश्चिम बंगाल के जलपाईगुड़ी के निकट करोला नदी के 2 कि.मी. क्षेत्र में बहुत सी मत्स्य प्रजातियों की मृत्यु हुई है। संस्थान के वैज्ञानिकों द्वारा किये गये अध्ययन से यह पता चला कि इस क्षेत्र में एण्डोसल्फान के विषाक्त प्रवाह के कारण मछलियों की मृत्यु हुई है। संस्थान ने असम राज्य सरकार के समक्ष एक विस्तृत रिपोर्ट रखी और यह सुझाव दिया है कि मोरीगांव के चरन बील में पिंजरा पालन हेतु *सिरहिनस मृगला* का संग्रहण घनत्व ईष्टतम (300 फ्राई/वर्ग मी.) होना चाहिये। रिपोर्ट अवधि के दौरान संस्थान ने मणिपुर के विष्णुपुर जिले में आर्द्रक्षेत्रों, तकामु और उलगमलेन पाट के आवास विविधता, जैव समुदाय एवं मात्स्यिकी का अध्ययन किया।

जी आई एस कार्यकलाप के अंतर्गत टी एन टी मिपस सॉफ्टवेयर द्वारा उत्तरी एवं मध्य भारत की प्रमुख नदियों की मत्स्य प्रजाति वितरण पर मैप बनाया गया है। इसी प्रकार 14 आर्डर के 60 वर्ग की मत्स्य प्रजातियों का एक डेटाबेस बनाया गया है। वेब जी आई एस द्वारा विभिन्न नदी विस्तार की मत्स्य प्रजातियों पर सूचनायें एकत्रित की गई हैं। यह बड़े हर्ष की बात है कि इस दौरान पश्चिम बंगाल की भागीरथी नदी में दो नई प्रजातियों, *Pinniwallago bhagirathiensis* sp nov. (मत्स्य प्रजाति) एवं *Macrobrachium hooghiense* sp nov. (झींगा प्रजाति) की खोज की गई है। इन प्रजातियों की होलोटाइप को कोलकाता के प्राणीविज्ञान सर्वेक्षण में जमा कर दिया गया है। इसी प्रकार काकदीप में अश्वमीन की एक विरल प्रजाति, *Hippocampus kuda* का पता चला। यह प्रजाति भारतीय वन्यजीव संरक्षण अधिनियम, 1972 की सूची-1 में सम्मिलित किया गया है। हुगली ज्वारनदमुख से इस प्रजाति को प्रथम बार एकत्रित किया गया है।

रिपोर्ट अवधि के दौरान अनेक शोध पत्रों, प्रशिक्षण मैनुअल, तकनीकी बुलेटिन आदि का प्रकाशन किया गया है। संस्थान में अनेक बैठकों का आयोजन किया गया - शीतकालीन प्रशिक्षण, CIFRI/CDA - ICZM परामर्शी परियोजना कार्यशाला, नोडल अधिकारी बैठक, मात्स्यिकी एवं हिल्सा जलकृषि पर परामर्शक बैठक, "उत्तर-पूर्वी क्षेत्र के आर्द्रक्षेत्रों एवं जलाशयों में वैज्ञानिक पद्धति से मात्स्यिकी प्रबंधन, अनुसंधान सलाहकार समिति बैठक एवं संस्थान प्रबंधन समिति बैठक आदि।

संस्थान में कुछ महत्वपूर्ण दिवसों को हर्षाल्लास के साथ मनाया गया - गणतंत्र दिवस, संस्थान संस्थापना दिवस, सुन्दरवन दिवस और संस्थान के बंगलोर का स्वर्ण जयंती समारोह आदि। इसके अलावा संस्थान के रिक्रिएशन क्लब द्वारा एक रक्तदान शिविर एवं निःशुल्क स्वास्थ्य परीक्षण कैम्प का आयोजन किया गया। निष्क्रा परियोजना के अंतर्गत एक मोबाइल अनुसंधान प्रयोगशाला का आरंभ किया गया जिसका उद्घाटन माननीय महानिदेशक, भा कृ अनु परिषद् द्वारा किया गया।

इस दौरान संस्थान में कई प्रशिक्षण कार्यक्रमों, जन जागरूकता अभियान, प्रदर्शनी आदि का आयोजन किया गया जिसमें देश के कोने-कोने से आये प्रशिक्षणार्थियों ने भाग लिया। कुछ वैज्ञानिकों को पुरस्कार एवं राष्ट्रीय एवं अंतर्राष्ट्रीय स्तर पर सम्मान प्राप्त हुआ है। संस्थान के कई अधिकारियों एवं कर्मचारियों को पदोन्नति दी गई है और कुछ अधिकारियों एवं कर्मचारियों का संस्थान के अन्य केन्द्रों में स्थानांतरण हुआ। एक वैज्ञानिक एवं प्रशासनिक अधिकारी की संस्थान मुख्यालय में नियुक्ति हुई है। मैं अधिकारियों एवं कर्मचारियों के सुनहरे भविष्य की कामना करता हूँ, साथ ही सेवानिवृत्त हुये अधिकारियों एवं कर्मचारियों के खुशहाल जीवन के लिये ईश्वर से प्रार्थना करता हूँ।

यह न्यूजलेटर आपके समक्ष प्रस्तुत है, इसे और भी उपयोगी एवं आकर्षक बनाने हेतु आपके सुझाव आमंत्रित हैं।

बैरकपुर
अगस्त, 2012

Anil Prakash Sharma
अनिल प्रकाश शर्मा

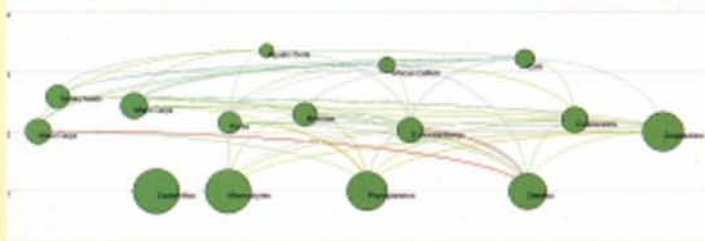




अनुसंधान उपलब्धियाँ

फूड वेब मॉडल का विकास

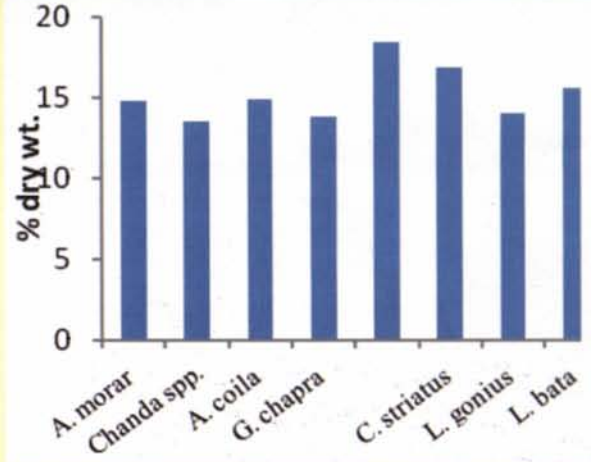
वायानाड जिले के कारापुरा जलाशय के फूड वेब मॉडल का विकास पारिस्थितिकी विषय से जुड़े 15 वर्गों द्वारा किया गया है जिसका उद्देश्य ट्रोफिक फ्लो एवं फूड वेब के बारे में सूचना प्रदान करना है। इस जलाशय की मुख्य तिलापिया प्रजाति, *Oreochromis mossambicus* है जिसकी पारिस्थितिकी एवं मात्स्यिकी में महत्वपूर्ण भूमिका है। लिन्डामैन स्पाइन विश्लेषण यह बताते हैं कि कारापुरा जलाशय मॉडल में ट्रोफिक पाथवे पांच स्तरों तक है। ट्रोफिक एग्रेगेशन रूटीन यह दिखाता है कि बायोमास एवं फ्लो का सांद्रता स्तर II एवं III तक है। ट्रोफिक के उच्चतम स्तर (टी एल IV और V) बायोमास बहुत कम है, क्रमशः 0.733 एवं 0.351। ऊर्जा प्रवाह की सांद्रता फूड वेब की निचले स्तर में होती है। मिश्रित ट्रोफिक प्रभाव के मैट्रिक्स यह दिखाता है कि *Clarias gariepinus* के बायोमास में आंशिक परिवर्तन के कारण ईल और स्नेकहेड प्रजातियों पर प्रतिकूल प्रभाव पड़ता है। इसी प्रकार, *O. mossambicus* के बायोमास में आंशिक परिवर्तन के कारण पादप भोजी प्रजातियों पर प्रतिकूल प्रभाव पड़ता है। तिलापिया, मिनोस, ईल एवं क्रस्टेशिया प्रजातियों की कुल क्षमता कम होती है क्योंकि इनके द्वारा ग्रहण की जाने वाली प्रजातियों की गुणवत्ता/घनत्व कम है (लगभग 1.0 से भी कम)। कारापुरा मॉडल में यह मान 0.1944 देखा गया जिसका अर्थ है खाद्य श्रृंखला के मध्य स्तर में मात्स्यिकी। ईल प्रजातियों की उपलब्धता से अन्य मत्स्य प्रजातियों और जलीय पक्षियों पर भी प्रतिकूल प्रभाव पड़ता है। नेटवर्क आंकड़ों से पता चलता है कि कारापुरा जलाशय में मात्स्यिकी एवं विकास की संभावना आशा के अनुरूप नहीं है।



प्रीथा पनिककर, एम फिरोज खान एवं बी सी झा

ब्रह्मपुत्र नदी की देशी प्रजातियों के प्रोक्सिमेट संरचना की गणना

ब्रह्मपुत्र नदी से प्राप्त छोटी व मध्यम आकार वाली देशी प्रजातियों के उत्तर-पूर्वी क्षेत्र के लोगों द्वारा पसन्द किया जाता है। इनमें से कुछ चयनित प्रजातियों के पोषक तत्वों के आंकलन के लिये इनके प्रोक्सिमेट संरचना का विश्लेषण किया गया। इसके लिये अक्टूबर से दिसम्बर 2010 के दौरान गुवाहाटी के उजान बाजार लैंडिंग केन्द्र से *Aspidoparia morar*, *Chanda spp.*, *Ailia coila*, *Gudusia chapra*, *Anabas testudineus*, *Channa striatus*, *Labeo gonius* एवं *Labeo bata* के नमूनों को एकत्र किया गया। इन नमूनों में यह देखा गया कि *A. testudineus* में प्रोटीन (0.01 से अधिक, सूखी मछली में 18.38 प्रतिशत), लिपिड (12.48 प्रतिशत), एश तत्व 8.30 प्रतिशत और नमी 59.79 प्रतिशत थी। इसी प्रकार *C. striatus* में प्रोटीन की मात्रा अन्य प्रजातियों की तुलना में अधिक 16.78 प्रतिशत था। विभिन्न आकार



वाली *A. morar*, *Chanda spp.* और *A. coila* के प्रोक्सिमेट संरचना का विश्लेषण किया गया। नमूनों के विश्लेषण से यह पता चला कि इन तीनों प्रजातियों के बड़ी आकार वाली मछलियों में नमी की मात्रा क्रमशः कम और लिपिड अधिक पाया गया। पर प्रोटीन की मात्रा समान पाई गई। केवल *A. coila* की बड़ी आकार वाली प्रजाति में प्रोटीन की मात्रा अधिक थी। अतः कुछ चयनित देशी प्रजातियों में प्रोटीन 11-19 प्रतिशत (अशोधित) एवं खनिज तत्व 2.18-8.03 प्रतिशत भरपूर और वसा सामान्य 2.33-12.5 प्रतिशत होती है।

डी देबनाथ, सी येंगकोकपम, बी के भट्टाचार्य, के के शर्मा पी गोगोई एवं एककाती

पश्चिम बंगाल की कारोला नदी में मछलियों की मृत्यु

पश्चिम बंगाल की कारोला नदी जलपाईगुड़ी के निवासियों के भोजन एवं आजीविका का महत्वपूर्ण स्रोत है। पर नवम्बर 2011 के दौरान दीनाबाजार से किंग साहबेरघाट तक 2 कि.मी. के नदी में बहुत अधिक संख्या में मछलियों की मृत्यु हुई। संस्थान के वैज्ञानिकों ने इसके कारणों का पता लगाने के लिये अध्ययन किया। अध्ययन में जल के समस्त प्राचल (पी एच, इ सी, क्षारीयता, कठोरता, बी ओ डी, सी ओ डी, नाइट्रेट, फॉस्फेट आदि) सामान्य और यह किसी भी प्रकार के सूक्ष्मजीवी संदूषण या अन्य किसी प्रकार के प्रदूषण से रहित पाया गया। जल में भारी धातुओं जैसे Fe, Zn, Cu, Mn, Cd और Pb का जमाव भी सामान्य देखा गया। पर एण्डोसल्फान जैसे कीटनाशकों के जल में उपलब्ध होने के कारण इसका प्रभाव मछलियों के लिये विष सिद्ध हुआ। जल में एण्डोसल्फान का जमाव 0.113 मि.ग्रा. प्रति ली. देखा गया जो मछलियों के उत्तकों में 22.8 मि.ग्रा. प्रति कि.ग्रा. था। पर एण्डोसल्फान के तत्व





ऊपरी और निचले स्तर में नहीं पाये गये। इससे यह तथ्य सामने आया कि आसानी से अधिक मछलियों के शिकार के लिये एण्डोसल्फान उस विशेष क्षेत्र में डाला गया था। संस्थान ने इस रिपोर्ट को राज्य सरकार को जमा कर दिया है और यह सुझाव दिया है कि इस क्षेत्र में मात्स्यकी का पुनरुत्थान किया जाय।

श्रीकान्त सामन्ता, एम ए हसन, सुबीर के नाग एवं बिजय के बेहरा

तैरते हुये पिंजरों में सिरहिनस मृगला के फ्राई संग्रहण घनत्व का मानकीकरण

असम के मोरीगांव जिले की चरण बील में तैरते हुये पिंजरों में सिरहिनस मृगला की फ्राई का संग्रहण के मानकीकरण के लिये परीक्षण किया गया। 12 तैरते हुये पिंजरों (2 x 2 x 2) को लगाया गया। प्रत्येक पिंजरे में सिरहिनस मृगला की फ्राई (औसत लम्बाई— 4.18 ± 0.07 से. मी., औसत शारीरिक भार— 0.71 ± 0.03 ग्रा.) का संग्रहण छः अलग-अलग घनत्व में किया गया— 50, 100, 150, 200, 250 फ्राई और 300। सभी आकार के 2 पिंजरों को स्थापित किया गया। संग्रहित मछलियों को दिन में दो बार भोजन तीन महीनों तक दिया गया। इस भोजन को मछली का आटा (10 प्रतिशत), सोयाबीन का आटा (25 प्रतिशत), सरसों की खली (25 प्रतिशत), चावल की भूसी (20 प्रतिशत), गेहूं का आटा (6 प्रतिशत), गेहूं की भूसी (12 प्रतिशत) एवं विटामिन व खनिज तत्वों को मिलाकर बनाया गया था। यह देखा गया कि 100 और 150 फ्राई वाले संग्रहण पिंजरों में मछलियों की वृद्धि दर एवं विकास उत्तम हुआ। खाद्य क्षमता अनुपात (Feed efficiency ratio) एवं प्रोटीन क्षमता अनुपात (protein efficiency ratio) भी इन पिंजरों में अनुकूल देखा गया। सभी पिंजरों में अतिजीविता दर में अधिक अन्तर नहीं पाया गया। अतः चरण बील में तैरते हुये पिंजरों में सिरहिनस मृगला का मानक संग्रहण दर 300 फ्राई प्रति पिंजरा निर्दिष्ट किया गया है।

डी देबनाथ, बी के भट्टाचार्य, सी येंगकोकपम, अनिल कु यादव, के के शर्मा पी गोगोई एवं ए ककाती

मणिपुर के तकामु और उनगमलेन पाट की आवास विविधता, जैव समुदाय एवं मात्स्यकी का अध्ययन

मई 2012 के दौरान मणिपुर के विष्णुपुर जिले के आर्दक्षेत्रों, तकामु और उनगमलेन पाट की आवास विविधता, जैव समुदाय एवं मात्स्यकी का अध्ययन किया गया। तकामु पाट जो मणिपुर राज्य सरकार के मात्स्यकी विभाग के अंतर्गत है, जलीय मेक्रोफाइट से ग्रसित (ग्रसन 15 प्रतिशत) पाया गया। इस पाट के कुछ जलीय को पौधों, *Zizania latifolia*, *Carex sp.*, *Saccharum spp.*, *Setaria pumila*, *Alpinia nigra*, *Hedychium spicatum* एवं *Narenga* का आर्थिक महत्व है और स्थानीय निवासियों के लिये ये आजीविका का आधार है। ये पौधे तैरते हुये चटाई जैसे जलीय अपतृणों (phumdis) के साथ लगे होते हैं। दूसरे ग्रहण किये जाने वाले पौधे हैं— अखरोट (*Trapa natans*) और मखाना (*Euryale ferox*)। जल के प्राचल जैसे तापमान 27.8–28 डिग्री से., सेची डिस्क पारदर्शिता 85–95 से. मी., पी एच 6.6–6.8, घुलित ऑक्सीजन 6.8–7.4 मि.ग्रा./ली., कार्बन डाई ऑक्साइड 3.8–5.4 मि.ग्रा./ली. और अम्लीयता 28–30 मि.ग्रा./ली. दर्ज

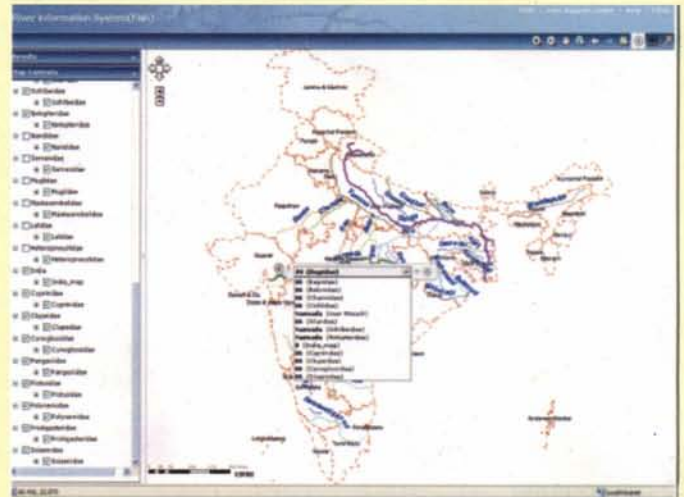
किया गया। इसी प्रकार उनगमलेन पाट जलीय मेक्रोफाइट से ग्रसित (ग्रसन 35 प्रतिशत) पाया गया। पर इस पाट के क्षेत्र में धान की खेती और मत्स्य एवं कृषि फार्म बनने के कारण इसका जलक्षेत्र कम हो गया है। इस पाट में आर्थिक महत्व वाले जलीय पौधे हैं— *E. ferox*, *Nelumbo nucifera*, *Nymphaea pubescence*, *Nymphoides indicum* एवं *T. natans* आदि। इस पाट के जल के प्राचल जैसे तापमान 27.8–28.2 डिग्री से., सेची डिस्क पारदर्शिता 83–90 से.मी., पी एच 6.7–7.2, घुलित ऑक्सीजन 6.3–7.1 मि.ग्रा./ली. कार्बन डाई ऑक्साइड 4.2–6.0 मि.ग्रा./ली. और अम्लीयता 27–28.2 मि.ग्रा./ली. दर्ज किया गया। दोनों आर्दक्षेत्रों में कॉमन कार्प, बिगहेड कार्प, तिलापिया, भारतीय मेजर कार्प एवं अन्य छोटी देशी मछलियों की प्रजातियां देखी गईं। दोनों ही पाट में छोटी देशी मछलियों की प्रजातियों जैसे *Anabas testudineus*, *Anguilla bengalensis*, *Acanthophtalamus punctatus*, *Channa orientalis*, *Botia bagarius*, *Barilius dogarsinghi*, *Garra graveli*, *Ompok bimaculatus* और *Osteobrama belangeri* पाई गईं पर इनका घनत्व कम था। इन सभी प्रजातियों का कृत्रिम पालन राज्य सरकार द्वारा किया गया है।

एस येंगकोकपम, डी देबनाथ एवं बी के भट्टाचार्य

नदियों के मत्स्य प्रजाति वितरण मैप

संस्थान ने उत्तरी और प्रायद्विपीय नदियों जैसे गंगा, यमुना, चंबल, बेतवा, पूर्वी बनास, सोन, केन, रूपनारायण, अजय, सुवर्णरेखा, कंसावती, ताप्ती, नर्मदा, गोदावरी, कृष्णा, कावेरी, तवा, तुंगभद्रा, हेमवती, महानदी, पेन्नार और सुवर्णरेखा ज्वारनदमुख में उपलब्ध मत्स्य प्रजातियों के वितरण मैप को टी एन टी मिपस सॉफ्टवेयर द्वारा बनाया। माइक्रोसॉफ्ट—एक्सेस प्रोग्राम में 14 आर्डर के 60 वर्ग वाली मत्स्य प्रजातियों के आंकड़ों पर डेटाबेस तैयार किया गया है।

इस वेब जी आई एस डेटाबेस में देश के विभिन्न नदियों की मत्स्य प्रजातियों के आंकड़ें दिये गये हैं। जल एवं मिट्टी संबंधी प्राचलों की ऑन-लाइन डेटाबेस के लिये MYSQL सर्वर डेटाबेस में एक डेटा स्ट्रक्चर बनाया गया है।



एस के साहू, डी करुणाकरन, डी एन झा, ए क यादव एवं एस मजुमदार





मछली एवं झींगा मछली की नई प्रजातियों की खोज

पश्चिम बंगाल की भागीरथी नदी में दो नई प्रजातियों, *Pinniwallago bhagirathiensis* sp nov. (मत्स्य प्रजाति) एवं *Macrobrachium hooghiense* sp nov. (झींगा प्रजाति) की खोज की गई है। इन प्रजातियों का होलोटाइप (क्रमशः IDs ZSI FF4488 और ZSI C5914/2) को कोलकाता के प्राणीविज्ञान सर्वेक्षण में जमा कर दिया गया है। इसी प्रकार काकदीप में अश्वमीन की एक विरल प्रजाति का *Hippocampus kuda* का पता चला। यह प्रजाति भारतीय वन्यजीव संरक्षण अधिनियम, 1972 की सूची-1 में सम्मिलित है। हुगली ज्वारनदमुख से इस प्रजाति को प्रथम बार संस्थान के नदीय प्रभाग द्वारा एकत्रित किया गया है।



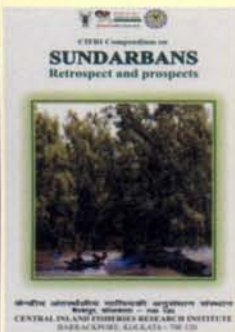
Macrobrachium hooghiense



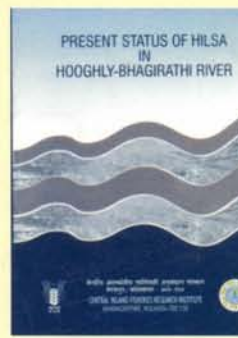
Hippocampus kuda

सी एम रौसित, आर के मान्ना, इउ भौमिक, बि बि सतपति, ए रायचौदुरी एवं ए मित्रा

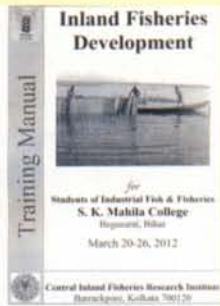
प्रकाशन



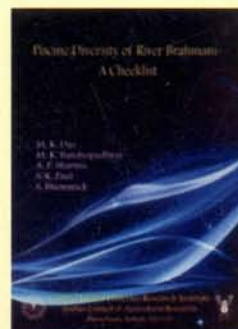
सुन्दरवन और इसके विकास संबंधी उपायों से जुड़े विभिन्न पहलुओं पर एक पुस्तक का प्रकाशन किया गया है। इस पुस्तक में कुल 15 लेख हैं। इसमें मैंग्रोव, पर्यावरण, प्रजाति विविधता एवं उनका संरक्षण, विविध कृषि, जलवायु परिवर्तन के प्रभाव और अनुकूलन, आर्सेनिक से खतरा, उत्पाद और सेवाओं तथा पारस्परिक आजीविका एवं इसकी निरंतरता का मूल्यांकन आदि पर प्रकाश डाला गया है। इस सार-ग्रन्थ का विमोचन सुन्दरवन दिवस, 3 जून 2012 को किया गया।



देश के ज्वारनदमुखों में हिल्सा मात्स्यिकी का हास एक विशेष समस्या के रूप में उभर रहा है। इसे ध्यान में रखते हुये एक पुस्तक का विमोचन डा. एस अय्यप्पन, सचिव, कृषि अनुसंधान व शिक्षा विभाग तथा महानिदेशक, भा. कृ. अनु. परिषद् के द्वारा 27 जून 2012 को हुआ। इस बुलेटिन को अनुसंधानकर्ता, शोध छात्र, संबद्ध अधिकरण और योजनाकारों को ध्यान में रख कर बनाया गया है जिससे हिल्सा का संरक्षण एवं प्रतिपालित उत्पादन किया जा सके।



'अंतर्स्थलीय मात्स्यिकी विकास' पर आधारित प्रशिक्षण पुस्तिका का संपादन प्रशिक्षणार्थियों को ध्यान में रख कर किया गया है। इसमें आर्द्रक्षेत्र व जलाशय, मत्स्य बीज व उत्पादन, मत्स्य रोग प्रबंधन, मछली के लिये पोषक तत्वों की आवश्यकता, पादप प्लवक व पेरिफायटन, जल व मृदा की गुणवत्ता, एकीकृत मत्स्य पालन, मछलियों का प्रोसेसिंग एवं संरक्षण, मात्स्यिकी विस्तार एवं आर्थिकी आदि पर आधारित लेखों को प्रस्तुत किया गया है।



ब्राह्मणी नदी देश के पूर्वी क्षेत्रों में बहती है। इसके डेल्टाई क्षेत्र में प्रसिद्ध भीतरकनिका वन्य जीवन अभ्यारण्य है। पर इस नदी में उपस्थित मत्स्य प्रजातियों से संबंधित सूचनायें अधिक उपलब्ध नहीं हैं। अतः इस नदी के मत्स्य प्रजातियों के नमूनों एवं सूचनाओं को एकत्र कर इसके जैव विविधता पर इस पुस्तक का प्रकाशन किया गया है।

पुरस्कार/सम्मान



दिनांक 17 से 18 फरवरी 2013 के दौरान आयोजित बायोवेड कृषि एवं प्रौद्योगिकी अनुसंधान संस्थान के भारतीय कृषि वैज्ञानिक और मत्स्य पालक कांग्रेस की 14वीं अधिवेशन में संस्थान के नदीय पारिस्थितिकी व मात्स्यिकी प्रभाग के प्रभागाध्यक्ष, डा. उत्पल भौमिक और संस्थान के इलाहाबाद क्षेत्रीय केन्द्र के प्रभागाध्यक्ष, डा के डी जोशी को फेलोशिप पुरस्कार से सम्मानित किया गया।



संस्थान के प्रधान वैज्ञानिक, डा. बी पी मोहान्ति ने दिनांक 4 से 6 मई 2012 के दौरान लियोनिया अंतर्राष्ट्रीय कन्वेंशन सेन्टर में आयोजित जैव विविधता पर वर्ल्ड कांग्रेस के एक सेशन की अध्यक्षता की। इस अवसर पर डा. मोहान्ति द्वारा 'एपलिकेशन ऑफ प्रोटियोमिक्स फार आइडेन्टिफिकेशन ऑफ स्पीसीज-स्पेसिफिक पेप्टाइड फॉर फिश फूड ऑथेन्टिकेशन' पर एक व्याख्यान दिया गया।