



The Inland Fisheries News

Newsletter of the Central Inland Capture Fisheries Research Institute

VOL.6 NO.2

JULY-DECEMBER 2001

ISSN 0972-0774

Dr. Sugunan takes over as the officiating Director

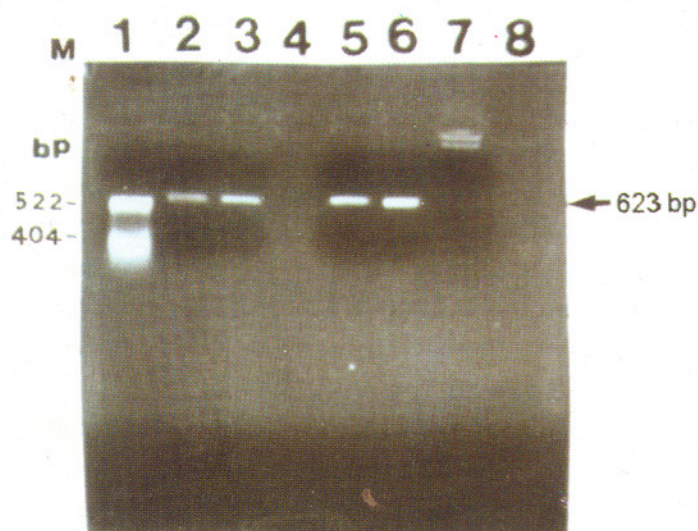
Dr. V. V. Sugunan, Acting Head, Floodplain Wetlands Division has taken over as officiating Director of the Central Inland Capture Fisheries Research Institute on 31 July, 2001. Dr. Sugunan took charge from Dr. A. K. Ghosh who retired on the same day on attaining the age of superannuation.



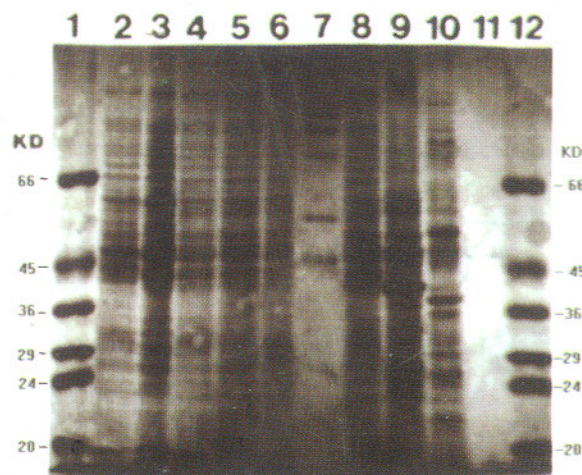
Detection and Analysis of *Vibrio* sp. using Polymerase Chain Reaction and SDS-PAGE

Vibriosis has been regarded as an important bacterial disease of fishes and prawns both in the estuarine and brackishwater systems. Different species of *Vibrio*, mainly *V. anguillarum*, *V. alginolyticus*, *V. vulnificus*, *V. fluvialis* in fish and *V. alginolyticus*, *V. parahaemolyticus* and *V. harveyi* in shrimp, are commonly reported. The mortality rate varies depending on the severity of damage. Reports of such disease are common in the coastal West Bengal.

Microbiology Laboratory of Fish Health & Environment Division at Barrackpore has initiated efforts to isolate, identify and characterize the bacterial pathogens involved in such cases. Rapid detection of pathogens using molecular techniques like polymerase chain reaction (PCR), Random Amplified Polymorphic DNA and antigenic characterization based on their polypeptide pattern on SDS – polyacrylamide gel electrophoresis (PAGE) and Western blotting are found to be useful.



Detection of *V. parahaemolyticus* using PCR. Arrow indicates the position of amplified 623bp DNA band in positive samples.



Analysis of bacterial proteins on 11% SDS-PAGE. *V. parahaemolyticus* from prawn (Lane 1-3), water samples (Lane 4-5) and from MTCC (Lane 8), *A. hydrophila*, MTCC (Lane 9) and unknown isolate (Lane 10). Lane 1, 7 & 12 are standard SDS-Molecular weight markers.

As an initial step to address this problem, PCR has been standardized and used for detection of *V. parahaemolyticus*. Samples of tissue or blood enriched in alkaline peptone water were used as the source material. PCR mix containing bacterial hot extract, *V. parahaemolyticus* "tdh" gene specific primers I & II Taq polymerase enzyme, buffer and nucleotide mixture (dNTPs) were amplified using Thermal cycler Gene Amp PCR system 2400. After 30 cycles of amplification, the samples were analysed on 1% agarose gel electrophoresis and presence or absence of DNA bands were visualized using Gel Documentation system (Vilber Lourmat). In positive cases, a 623 bp DNA fragment was noticed indicating the samples to contain *V. parahaemolyticus*. Further work is in progress to detect other fish bacterial pathogens using PCR which will be very useful in rapid detection of fish bacterial diseases.

To analyse the polypeptide pattern, the protein extracted from *V. parahaemolyticus*, and standard *Aeromonas hydrophila*, *V. parahaemolyticus* collected from MTCC, Chandigarh, were electrophoresed on 11% SDS-PAGE.

The polypeptide pattern was visualized using gel documentation system and analysed using gel scanning and Image analysis software Bio ID. Results revealed close similarity in the polypeptide profile of *V. parahaemolyticus* isolates from water samples, prawn and MTCC, but different in other isolates. It was possible to calculate the number of bands, protein content, and molecular weight of each protein and estimate the similarity index. This would be useful in differentiating various isolates for their characterization. Further work is in progress to identify the immunogenic and immunodominant proteins of fish bacterial pathogens and use of such protein markers in diagnostics.

Loktak lake – issues of concern from fisheries perspective

Loktak, the largest natural freshwater lake in the northeast is important for Manipur from both economic and ecological points of view. The population around the lake largely depends upon the lake resources for their subsistence. The lake is rich in bio-diversity and has been

designated as the wetland of international importance under Ramsar Convention in 1990.

The characteristic feature of the lake is the presence of floating islands locally known as the phumdis. They are the heterogeneous mass of soil vegetation and organic matter at various stages of decomposition. They occur in all sizes and thickness, occupying about two third of the lake area. These cover variety of habitats which sustain a rich biological diversity of macrophytes, vertebrates, and invertebrates.



View of Loktak Lake in Manipur

The analysis of various issues confronting Loktak Lake revealed that the loss of vegetation in catchment area and construction of the Ithai barrage resulted in alteration of hydrological regime, inundation of agricultural lands, loss of fish population and diversity, weed infestation, and reduction in the thickness of the phumdis in the lake. The increased water area of the lake has enhanced dependence on fishery activities. Phumdis fishing is the most important fishery practice in the lake contributing major share in fish catch. Over the years, the number of phumdis has increased tremendously due to rise in area under floating islands. The change in hydrological regime affected the methods of phumdis fishing also. Considering the importance of phumdis fishing and change in technique of fishing, the Institute is conducting investigations to examine

- i) retrospect and prospects of phumdis fishing, ii) dynamics in its technique, and iii) its economic viability.

Genetic Characterization of Indian shad, *Tenualosa ilisha*, using Random Amplified Polymorphic DNA

RAPD applied by scientists at CIFRI Barrackpore to examine the intra and interpopulation differences in *Tenualosa ilisha* from different river systems of India.

The Indian shad, *Tenualosa ilisha* is an anadromous fish, inhabiting the Western part of Indo Pacific region and migrating to various rivers of India, for breeding. Due to construction of dams and barrages, the monsoon migration of the fish is adversely affected impeding the fish's ability to reach its natural breeding grounds. There is a raging controversy regarding the existence of different sub-populations of hilsa. Application of modern biochemical tools can unravel much of the mysteries about the sub-populations.

Preliminary Preliminary results emanating from the biometrical, morphological and serological investigations point to the existence of sub populations of hilsa (*Tenualosa ilisha*). They need confirmation. Hilsa inhabiting the Bay of Bengal and rivers viz. Ganga, Padma, Brahmaputra, Mahanadi, Godavari, Tapti and Narmada were subjected to RAPD studies to confirm the existence of sub-populations.

RAPD technique consists of amplification by polymerase chain reaction, of random segments of genomic DNA using a single short primer of arbitrary sequence. There is no requirement of prior knowledge of the sequence information. It uses nanograms of DNA and its cost effectiveness provides an advantage in the population and other genetic studies. RAPD is successfully used to detect genetic variation within and among related species of populations of fishes and shows high levels of polymorphism than the allozyme analysis. With RAPD, polymorphism can be detected in closely related organisms such as that of a species complex and of different populations of a single species.

The oligonucleotide primer OPA-11 gives 12 numbers of bands. Further, screening for more number of primers and determination of intra- and interpopulation differences in *Tenualosa ilisha* populations is under progress.

Fisher livelihood systems and major issues in Assam

The state of Assam is rich in the aquatic resources having more than 1 lakh hectares of water area. These water bodies are diverse in their shape, size and characteristics and sustain large number of people for their livelihood. The Northeastern regional centre of CIFRI is conducting research on the livelihood systems and issues of the fishers of Assam, with a focus on fisher households at the centre stage. The system consists of a basket



Fishing in a beel of Assam

of activities and enterprises like capture fisheries, culture fisheries, agriculture, daily wage labour, etc. The basket chosen by the fishers is dependent upon their endowments and comparative advantage with respect to household resources. The fishers can be classified into three categories based on the level of dependence on fisheries, e.g. exclusive (>80% of family income), partial (30-80%) and marginal (<30%). The investigations on adoption patterns towards successful enterprises and coping strategies for the failures of the fisher households are underway.

Health hazards among the fish seed collectors of Sunderbans

The aquaculture industry depends, to a large extent, on the natural seed collected from rivers and estuaries. Sunderbans with its estuarine creeks, canals and thick mangrove foliage offer excellent nursery grounds for most of the euryhaline fin fish and shell fish. Millions of tiny larvae, post larvae or juveniles of several species enter into the ecosystem along with high tides. Being motivated with regular cash income, the poor people of



Skin disease of a seed collector of Sunderban

Sunderbans irrespective of religion, cast, age or sex have whole heartedly accepted collection of such seeds as an important source of income for their livelihood. About 4 lakh people in the area are engaged in this profession. During collection of seed, the collectors remain in waist-deep water for hours together. A sizeable section of such collectors have been observed to fall victim to some diseases. To throw some light on the diseases, an investigation was carried out in some villages of Sunderbans.

A sample consisting of 240 informants were personally interviewed for the investigation. The age of the seed collectors varied between 11 and 60 years. In the collection process, female collector's ratio was observed to be more and eventually more females were affected with diseases. Their period of involvement in the seed collection profession varied between 2 and 12 years. As many as 34 percent of them earned Rs.1,000/- per month and 20% earned Rs. 8,000/- per month. The diseases reported by the respondents* [N= 200 : Seed collectors]

in order, were skin diseases (48%), leucorrhoea (41%), eye problem (38%), stomach disorder (33.5%), loss of body hair (29%), weakness (26%), problem of urination (12%), irregularity in menstruation (11%), palpitation and nausea (10%), blood pressure / heart problem (9%), irritation and burning sensation in the body (6%), whereas in control population [N=40 : non-seed collectors] diseases were eye problem (30%), stomach disorder (25%), heart diseases (10%), diabetes (20%), tuberculosis (10%), asthma (10%), leprosy (5%), headache (10%), and gonorrhoea (5%). Most of the respondents (56.5%) reported increased intensity of the diseases during summer. About 58% of them (male & female) were addicted to smoking bidi followed by betel leaf (33.5%). Only 12 percent of them consulted doctors, 10.5 percent consulted quacks and 5 percent depended on indigenous plants for treatment of diseases. The poor people of Sunderbans who choose this profession for their livelihood, cannot afford to bear the cost of treatment. Therefore, it is high time that welfare programmes are launched for the benefit of those down-trodden rural populace. The results were presented in the 61st Bengal Medical Conference under Indian Medical Association held at Science City, Kolkata on 19-20, January, 2002.

**(Some respondents mentioned for more than one diseases)*

IMPORTANT EVENTS

● The Governor inaugurates CIFRI's Regional Centre at Guwahati

A new laboratory and office complex of the Northeastern Regional Centre of Central Inland Capture Fisheries Research Institute (ICAR) at Guwahati was inaugurated by His Excellency, Lt. Gen. (Retd.) S. K. Sinha, Governor of Assam at a function held at the HOUSEFED Complex, Dispur on 6 November, 2001. Speaking on the occasion, His Excellency expressed immense pleasure that the CIFRI was making all efforts to provide research, extension and training support to the northeastern region.

Earlier, Dr. V. V. Sugunan, Director, CIFRI extended a warm welcome to His Excellency Lt. Gen. (Retd.) S. K. Sinha; Hon'ble Minister of Fisheries, Md. Nazibul Umar; Dr. S. A. H. Abidi, Member, ASRB; Dr. K. Gopakumar, DDG (Fisheries), ICAR and Mr. M. K. Barua, Secretary & Commissioner Fisheries, Assam and all other dignitaries to the regional centre.



Governor unveils the plaque during the inaugural ceremony

◆ Dr. V. V. Sugunan, Director & Dr. B. C. Jha, Principal Scientist participated in the National Seminar on "Use of Hindi in ICAR Fisheries Research Institutes" organized by CMFRI, Kochi during 12-13 October, 2001.

◆ Dr. V. V. Sugunan, Director, participated in the International Seminar on "Sustainable Fisheries for Nutritional Security" organized by CIFE, Mumbai during 4-6 December, 2001.

● Consultancy on fish passes

◆ A consultancy Project with NHPC explored the possibility of fisheries development and suitable design for fish pass in Teesta Low Dam Hydroelectric Project Phase III & IV. Dr. V.V. Sugunan, Director and Sri U. Bhaumik, Principal Scientist visited Project site, Siliguri, West Bengal.

● Regional Consultation on research needs for inland fisheries development in the northeast

A Regional Consultation on research needs for inland fisheries development in the northeast was organised by CIFRI at its Northeastern Regional Centre, Guwahati, during 6 & 7 November, 2001

HUMAN RESOURCE DEVELOPMENT

◆ Dr. P. K. Katiha, Senior Scientist was deputed to Penang, Malaysia for attending the First Regional Workshop for ADB-RETA project entitled "Strategies and options for increasing and sustaining fisheries and aquaculture production to benefit poor households in Asia", from 20-25 August, 2001.

◆ Sri Utpal Bhaumik and Dr. M. K. Das, Principal Scientists participated in the Seminar cum Training on Intellectual Property Rights held at Indian Institute of Sugar Cane Research Lucknow during September 5-7, 2001 and was organized by Indian Council of Agricultural Research.



Participants interacting in the National consultation

EXTENSION SCENE

◆ An off-Campus training on "Management of Estuarine Wetlands" was organized by CIFRI in collaboration with bheri owners at 4 different bheries at Salk Lake area during October 27 to 31, 2001. A total of 56 fish farmers from different bheries in and around Kolkata underwent the training. The trainees



CIFRI's pavilion at CIFE, Mumbai

also participated in activities like group action and identified relevant constraints towards management of wetlands. The practical classes were conducted in different bheries to acquaint themselves in various location-specific ecology. Films on fisheries were also screened for the benefit of the trainees.

◆ The Institute participated in the Science Agricultural Fair at Chakdah, Nadia, organized by Gandhi Seva Sangha during July 4 to 15, 2001 with Charts and Posters. Thousands of fish farmers and interested persons visited the pavilion.

◆ The Institute participated in an Exhibition "Kisan Pradarshni" organised on the occasion of birth Anniversary of Jan Nayak Ch. Devilal at Karnal, Haryana during September 9 to 23, 2001 by the Directorate of Fisheries, Govt. of Haryana. The work and achievements of the Institute were depicted through Charts and Posters. Lakhs of fish farmers, fishermen and interested people visited the pavilion.

◆ The Institute organized an exhibition in Guwahati during November 4 to 6, 2001 with Charts and Posters in connection with inauguration of CIFRI Regional Centre, Guwahati. Various films on fisheries were screened for the benefit of the fish farmers, fishermen and other interested persons.

◆ Exhibits were supplied to the State Fisheries Dept., Govt. of West Bengal for participating in an Exhibition "Rajya Vigyan Mela 2001".

◆ Participated in the Exhibition "Fish for Nutritional Security in 21st Century" held during December 4 to 6, 2001 at Central Institute of Fisheries Education, Mumbai. Thousands of people visited the Institute's pavilion.



A trainee expressing constraints faced in his farm

STAFF NEWS

Appointments

	Post	Effective from
Dr. V. V. Sugunan	Director (officiating)	31.07.2001

Promotion

	Post	Effective from
Sri R.C.P. Singh	Asstt. Adm. Officer	01.08.2001
Sri Achintya Kumar De	Assistant	29.09.2001
Sri Alok Sarkar	T-6	01.01.2000
Sri K.R. Deb,	T-4	-do-
Sri H.C. Banik	T-5	-do-
Sri B.B. Das	T-5	-do-
Sri K. Ganeshan,	T-4	-do-
Sri S. Bhattacharjee,	T-4	-do-
Dr. S. Bijoy Nandan, T-5	T-6	03.02.2000
Sri R.C. Mandi	T-6	-do-
Sri S.K. Hameed	T-6	-do-
Sri Sukumar Saha	T-6	-do-
Sri C.N. Mukherjee	T-6	-do-
Sri Sanjay Bhowmick	T-6	-do-
Smt. Anjali De	T-(7-8)	01.07.2000
Sri A.R. Paul	T-6	-do-
Sri N.N. Majumder	T-6	-do-
Sri S.P. Ghosh	T-6	-do-
Sri S.R. Meena	T-4	04.12.2000
Sri U.K. Chatterjee	T-4	01.01.2001
Sri N.C. Biswas	T-4	-do-
Dr. P. K. Dhara	T-4	24.01.2001

Placement

	Post	Effective from
Sri S.N. Sadhukhan	T-3	03.02.2000
Sri Swapan Chatterjee	T-3	-do-
Sri S.K. Deb	T-3	-do-
Sri S.K. Biswas	T-3	-do-
Sri K.P. Singh	T-3	-do-
Sri B.N. Das	T-3	-do-
Sri C.K. Vava	T-3	-do-
Sri D. Chatterjee	T-3	-do-
Shri R.L. Balmiki	T-3	-do-
Sri Subhendhu Mandal, T-1 (Engine Driver)		29.06.1996
Sri Asim Kumar Jana, T-1 (Engine Driver)		-do-
Sri Bablu K. Naskar, T-1 (Engine Driver)		29.06.1996
Md. Yousuf Ali Sk., T-1 (Engine Driver)		-do-

Merit increment(s) on recommendations of the Assessment Committee

	No. of Increments	Effective from
Sri P.S.C. Bose, T-5	one	01.07.1998
Sri S.K. Biswas, T-I-3	one	01.01.2000
Smt. A. Sengupta, T-II-3	Three	27.08.2000

Upgradations in next higher scale under Assured Career Progression (ACP) Scheme

	Upgraded to	Effective from
Sri A. Bhattacharjee, SSG-II	Rs.2650-4000	05.07.2001
Sri D. Chaudhury, Sr.Clerk	Rs.5500-9000	09.11.2001
Smt. Anjali Neogi, Sr. Clerk	Rs.5500-9000	24.12.2001

Transfer

	From	To
Sri C.C. Das, AAO	Allahabad	Barrackpore
Sri Bablu Mondal, SSG-II	Kakdwip	Diamond Harbour
Sri B.P. Mishra, SSG-II	Diamond Harbour	Kakdwip
Sri V. Baria, SSG-I	Vadodara	Barrackpore
Sri A. Ramaswamy, LDC	Bangalore	Coimbatore
Sri S.K. Das, T-6	Allahabad	Barrackpore
Mrs. Suvra Bhattacharyya, LDC	Inter-Institutional transfer from CRIJAF to CIFRI	

Retirement

	Date of retirement
Dr. A.K. Ghosh, Pr. Scientist	31.07.2001
Sri A.K. Chakraborti, AAO	31.07.2001
Sri P. Singh, T-I-3	31.07.2001
Sri Santosh Kumar Das, T-6	31.08.2001
Sri L.K. Parbat, T-I-3	30.09.2001
Sri S.K. Kar, Asstt. Adm. Officer	30.09.2001
Sri Tek Bahadur, SSG-IV	30.11.2001
Sri Hiralal Biswas, T-2	30.11.2001
Shri B. Pugalendhi, SSG-II (Voluntary)	14.11.2000
Sri H.K. Sen, T-5	31.12.2001

LIBRARY

New Additions (Books)

- *Planing of fishery harbours in the Indian context* by C.T. Betgeri (Ed)
- *Aquatic pollution and management* by Mohapatra, B.C. (Ed)
- *Sustainable Indian Fisheries* by Pandian, T.G. (Ed)
- *Fish Biodiversity of North-East India* by Ponniah, A.G. (Ed)

- *Protozoan parasites of fishes* by Lom Jiri & Iva Dykova (Ed)
- *21st Century universal encyclopedia, Vol.1-30* by Colling Wood, L. (Ed)
- *Genetic improvement and conservation of carp species in Bangladesh* by Hussian, M.G. (Ed)
- *Limnology – lake and river ecosystems* by Wetzel, Robert G. (Ed)
- *River quality : Dynamics and restoration* by Laenen, Autonijs & David A. Dunnette (Ed)
- *Nonindigenous freshwater organisms vectors, biology and impacts* by Claudi, Renata & Joseph H. Leach (Ed)
- *Handbook of ecosystem theories and management* by Jorgensen, S.E. & F. Muller (Ed)
- *Encyclopedia of Biodiversity, Vol. 1-5* by Levin, S.A.
- *Aquaculture Science* by Parker, Rick. (Ed)
- *Applied management for research Institutes, Vol.2* by Singh, R.K. & Jyotsana Shrivastava (Ed)
- *Private extension in India : Myths, realities apprehensions and approaches* by Shekara, P. Chandra
- *Histological and histochemical methods – Theory and practice* by Viernan, J.A. (Ed)
- *Eco-friendly management of resources for doubling fish production – Strategies for 21st Century* by Sinha, M., Dharendra Kumar & P.K. Kathia (Ed)
- *Ecological Engineering – An introduction to ecotechnology* by Mitsch, William J. & Sven Eric Jorgensen (Ed)
- *Inland fishery enhancements fisheries technical paper No.374* by Petr, Tomi (Ed)
- *Coldwater aquaculture and fisheries* by Singh, H.R. & W.S. Lakra (Ed)
- *Practical genetics for aquaculture* by Greg Iutz, C. (Ed)
- *Diseases of carp and other cyprinid fishes* by Hoole, D.D. Bucke & P. Burgess & I. Wellby (Ed)
- *Environmental impacts of aquaculture* by Black, Kenneth D. (Ed.)
- *Biology of finfish and shellfish* by S.L. Chondar (Ed)
- *Canadian J. of Fisheries and Aquatic Sciences*, **58**(1-7) 2001
- *Current Science*, **80**(12), 2001, **81**(1-10), 2001
- *Ecology of Freshwater Fish*, **10**(1-3), 2001
- *Environmental Biology of Fishes*, **61**(4), 2001, **62**(1-3), 2001
- *Environmental Pollution*, **112**(2-3), 2001, **113-114**, 2001, **115**(1-2), 2001
- *Estuaries*, **24**(3-4), 2001
- *Environment & Ecology*, **19**(3-4), 2001
- *Environmental Conservation*, **28**(2-3), 2001
- *Fisheries : American Fisheries Society*, **26**(6-11), 2001
- *Fishing Chimes*, **21**(3-7), 2001
- *Freshwater Biology*, **46**(6-10), 2001
- *Hornbil*, (Apr.-June & July-Sept.), 2001
- *International J. of Ecology & Environmental Sciences*, **27**(2), 2001
- *Indian J. of Animal Sciences*, **71**(8-11), 2001
- *Indian J. of Environmental Health*, **43**(1-4), 2001
- *Journal of Aquatic Animal Health*, **13**(3-4), 2001
- *Journal of Biosciences*, **26**(4-5), 2001
- *J. of the Bombay Natural History Society*, **98**(2), 2001
- *J. of Environmental & Pollution*, **8**(3-4), 2001
- *J. of Environmental Biology*, **22**(3-4), 2001
- *J. of Fish Biology*, **59**(4-5), 2001
- *J. of Fish Diseases*, **24**(5-6), 2001
- *J. of Ichthyology*, **41**(8-9), 2001
- *J. of Indian Soc. Soil Science*, **49**(2-3), 2001
- *J. of Interacademia*, **5**(3-4), 2001
- *J. of Nature Conservation*, **13**(1, 2), 2001
- *Kheti*, **54**(5-9), 2001
- *Maach*, **19**(7-12), 2001
- *Naga : The ICLARM (Quarterly)*, **24**(1-4), 2001
- *National Geographic*, **200**(1-4), 2001
- *North American J. of Aquaculture*, **63**(3-4), 2001
- *North American J. of Fisheries Management*, **21**(3-4), 2001
- *Pollution Research*, **20**(1-3), 2001
- *Proceedings of Indian National Science Academy*, **67**(3-6), 2001
- *Resonance : J. of Science Education*, **6**(7-12), 2001
- *Science and Culture*, **67**(9-12), 2001
- *Transactions of the merican Fisheries Society*, **130**(4-6), 2001
- *Water Research : The Journal of the International Association of Water Quality*, **35**(10-18), 2001

New Additions (Journals)

- *Aquaculture*, **198**(3-4), 2001, **199-201**, 2001, **202**(1-2), 2001
- *Asian Fisheries (Science) Society*, **13**(4), Dec. 2000, **14**(1), March 2001

Published by : The Director, Central Inland Capture Fisheries Research Institute, Barrackpore-743101, West Bengal
 Edited by : Dr. Manas Kr. Das
 Assisted by : Sarvashri H. Chaklader, P. Dasgupta & P.K. Ghosh
 Printed at : M/s. Barrackpore Press, Barrackpore