

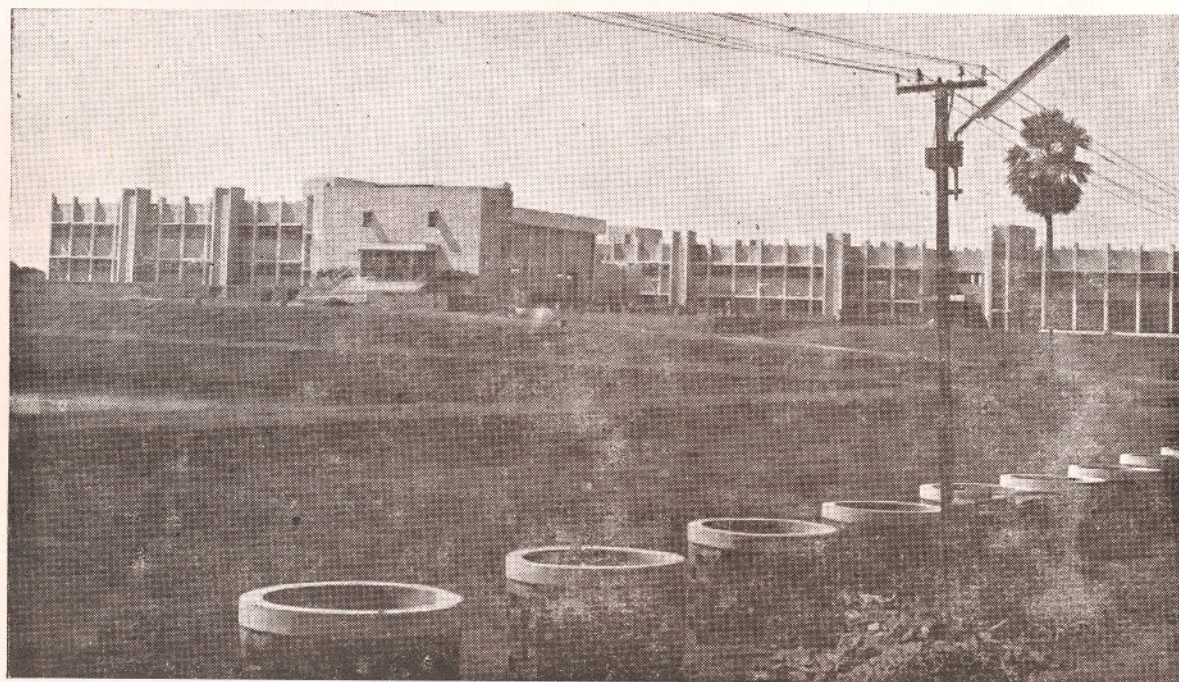


CIFRI NEWSLETTER

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Freshwater Aquaculture Research and Training Centre of CIFRI at Dhauli is a modern fish farm complex spread over 144 ha. It has 800 scientifically designed experimental ponds and all ancillary structures and modern laboratories. Thrust is mainly in the field of fish genetics and hybridisation, fish nutrition, microbiology, ichthyopathology and fish health protection, etc. This Centre is fast emerging as a leading international aquaculture research centre. FARTC is also functioning as a Regional Aquaculture Lead Centre of FAO.

RESEARCH HIGHLIGHTS

Hilsa culture in confined water — no longer a remote possibility



The highly prized and ecologically important Indian shad, *Hilsa ilisha* has attracted the attention of CIFRI scientists for the last two decades. Apart from the earlier studies on the biological and conservational aspects of *Hilsa ilisha* the later part of 1970s witnessed CIFRI making headways in its culture techniques. The researches carried out at the Allahabad Research Centre have well established the feasibility of artificial fecundation and rearing of hilsa in confined inland waters.

And now, the experiments progressing at CIFRI campus at Barrackpore have further explored the possibility of culturing *Hilsa ilisha* to marketable size in pond environment. Hilsa fry of 4-6

Hilsa fry collected from the Hooghly estuary were reared to marketable size in a freshwater pond at CIFRI.

cm size stocked and reared in a 0.1 ha pond have recorded a growth of about 240-250 g in 448 days. The fry were collected from the Hooghly estuary near the experimental site and were directly transferred to the culture pond. Higher level of dissolved oxygen and a feeble current in pond water were maintained during initial stages of culture by mechanical splashing of water under pressure. As a part of management practice, only periodic manuring of pond water was done and no artificial feeding was resorted to. During this experimental rearing of hilsa no significant mortality was encountered. Attempts are now under way to improve the culture techniques further.

This phenomenal success assumes special significance in view of the fact that hitherto hilsa culture in confined waters was considered to be a remote possibility.



Augmenting fish and prawn seed

For exploring the feasibility of establishing a brackishwater fish and prawn breeding unit at Puri, a team of CIFRI scientists camped for three months at Puri and conducted a number of fish and prawn breeding experiments yielding encouraging results.

The Tiger shrimp *Penaeus monodon* (182 mm/45 g to 210 mm/75 g) were reared and matured in maturation tanks. The prawns reached 3rd stage of maturity within fourteen days after bilateral ablation and three prawns bred but the eggs failed to develop. The scientists were also successful in breeding *P. merguensis* under controlled laboratory conditions.

Besides, four sets of 'danglo' (*Liza macrolepis*) were bred by adopting dry method of stripping. The hatchlings could be reared for further studies. In another experiment, *Mugil speigleri* ♂ and *M. subviridis* ♀ were cross bred successfully, though most of the hatchlings were deformed and could not survive for more than three days.

Earthen pot Carp Hatchery developed at the Krishnanagar Centre of CIFRI

Earthen pot "Carp Hatchery" for rural areas

A low cost earthen pot "Carp Hatchery" suited to rural conditions has been developed at this Institute. The Carp Hatchery consists of three round earthen pots (vats) with a capacity of 250, 100 and 100 l respectively. The water from the bigger container kept at a higher level is allowed to flow to the middle container placed at a lower level through a rubber tube fitted with an aluminium tube closed at one end and having peripheral perforations which help circulate the water in the second pot. From the second container the water flows to the third container placed at a still

lower level, through a spout. The eggs are placed for hatching in the second container which is covered with a round mesh net frame to avoid the eggs and egg shells from flowing out. The flow of water is maintained @ 2-3 l per minute in this unit. About one lakh eggs (20 l) can be hatched in a single unit by providing flow of water through a series of 3 vats.

The cost of a unit is about Rs. 50/- only. The same vats can be used for fish breeding purposes in place of breeding hapas and also for short-term rearing of spawn.



World Environment Day at CIFRI

Central Inland Fisheries Research Institute celebrated World Environment Day on June 5, 1981 with awareness and enthusiasm. Dr. A. V. Natarajan, Director, CIFRI in his keynote address expressed CIFRI's deep sense of concern with regard to the severe strains our environment is being subjected to. While addressing an assembly of distinguished scientists at CIFRI he explained the global significance of World Environment Day. He further, fortified his contention by citing the accelerated rate of unscientific exploitation of our forest resources. The fast denudation witnessed in the catchment areas of our river basins caused unabated soil erosion resulting in silt deposition in rivers. The consequent rise in river beds caused flash floods bringing about enormous national loss and untold human miseries every year.

Dr. Natarajan forewarned that our aquatic environment was being imperilled due to the uncontrolled discharge of industrial and domestic raw effluents into our rivers. Apart from creating health problems, this may lead to the depletion of our riverine and estuarine fishery resources. This was already indicated in the research findings of CIFRI. He strongly advocated adoption of environ-

ment management measures on a wider scale so that the present resources were saved from the scourge of environmental degradation for posterity.

Special lectures on 'the conservation of Hilsa of Lower Ganga' and 'the impact of pollution on fishery resources of Hooghly' were delivered by S/Shri K. K. Ghosh and B. B. Ghosh, Senior Scientists of the Institute. Quoting CIFRI's research results Mr. K. K. Ghosh pointed out that loss of breeding grounds of hilsa due to effluents discharged from a large number of factories situated on the banks of Hooghly have been reported, although fishery of hilsa is thriving well. Artificial barriers across the rivers have curtailed the migration of *Hilsa*. With the increased water discharge after the Farakka barrage came into operation hilsa catches in recent years have been consistently better.

Shri B. B. Ghosh apprehended that the adverse effects of organic and inorganic effluents released from over a hundred industries to the Hooghly estuary was felt even far below the outfall points. The polluted estuary zone between Nabadwip and Baranagar exhibited significant fall in annual fish landings. The decline was estimated as 74-87% for

hilsa, 91-94% for prawn and 86-94% for miscellaneous group of fishes during 1966-71 as compared with the unpolluted zone. Shri Ghosh also revealed that the bio-accumulation of heavy metals in some shrimps and fishes from the polluted zone near some industries has far exceeded the safe limits.

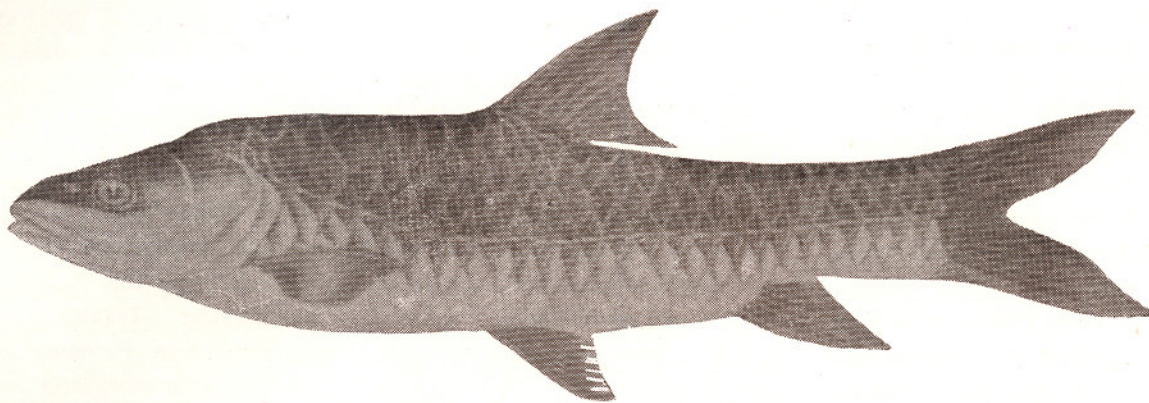
During the deliberations, Shri B. Venkatesh, Scientist-1 opined that it was very essential to preserve the migratory character of *Hilsa* which makes it a unique biological material capable of withstanding wide range of salinity and covering long distances against strong water currents. Maintaining migratory habit of hilsa by providing adequate passages would help a lot in preserving a unique germplasm, he added.

In his concluding remarks Mr. P. Das, Scientist-3 exhorted the scientists to help conserve our valuable natural resources. He urged them to spread the message of World Environment Day far and wide.

At Kalyani Centre of CIFRI, the Day was celebrated by releasing a large number of farm-produced young frogs into the nature.

KNOW YOUR FISHES—1

amidst stones, pebbles etc. in shallow pools of the stream. The average number of eggs in the breeding ground per sq. m ranges between 30-37.



GOLDEN MAHSEER

Mahseers are the irresistible favourites of game enthusiasts ever since they had been introduced in the lakes of Himalayas from the streams. They are regarded as sacred by Hindus and are called 'Mahsia' meaning fish *Par excellence*. Mahseers had ever been a delight to fish lovers and it is no surprise that the history of Indian rod is full of anecdotes about them. The etymology of the word 'Mahseer' itself is elaborately discussed and they are aptly called 'fish among fishes'.

We introduce the biggest and most handsome among the eight species of Mahseers—*Tor putitora* also called putitor mahseer, golden mahseer or the common Himalayan mahseer. Its body is greenish above with a silvery white abdomen. A pair of rostral and a pair of maxillary barbels almost equal to the diameters of

eye are present. Lips are thick with a continuous groove in the lower jaw. Dorsal fin originates midway between the tip of the mouth and tail base. Paired fins are greyish green and the other fins shot pink. It is reported to grow upto a length of 2.75 m. This mahseer has large scales, sometimes as large as the human palm.

Putitor mahseer originally belonged to the streams and it was first introduced in the lakes in 1858. It occurs all along Himalayas from Kashmir to Assam. They are omnivorous. It is believed that they were originally herbivorous and have subsequently adopted themselves to animal diet. They are often predatory to other fishes. Sometimes, a group of putitor mahseers chase and surround other small fishes and pounce upon them like wild haunds.

The mahseer breeds several times in a year. Eggs are laid

Even this splendid fish which 'catches' tourists in a big way is not without its problems. With the establishment of large barricades across rivers, the natural habitat of the fish is being disturbed. Indiscriminate fishing and dynamiting hasten the extinction of this fish. Mahseers require deep clear running water for feeding and growth. They require small running streams for breeding. In order to save this fish from doom, measures are to be taken to preserve some natural environment, or to rehabilitate them by artificial methods of breeding and rearing. CIFRI has made considerable headway in the artificial breeding of this fish.

Systematic position :-

Family : Cyprinidae

Genus : *Tor*

Species : *T. putitora*

Local names : *Burapatra* (Assamese) *Poomeen* (Tamil)

Naharm (Hindi), *Puti machh* (Bengali) *Kuktah* (Punjabi)

Extension Activities

CIFRI at Uttarbanga Krishi Mela '81

CIFRI participated in an exhibition in Uttarbanga Krishi Mela '81 at Dinhata, West Bengal from 18.4.81 to 3.5.81 jointly with JARI and JTRL. The Mela was organised by the West Bengal State Marketing Board. Shri Jyoti Basu, Chief Minister, Government of West Bengal was the Chief Guest in the validictory function. CIFRI's exhibits attracted the attention of a large section of the estimated crowd of over three lakhs.

Besides the display of exhibits of fisheries interest, two films on induced breeding and composite fish culture were screened at the Mela which became very popular among all sections of the visitors.

At JARI

The Extension Section of the Institute participated in an exhibition at Jute Agricultural Research Institute, Nilganj, West Bengal during 28-29 May '81 on the occasion of celebration of their Lab to Land Programme. About 3,000 people visited the CIFRI stall during the above days.

Advisory services

Technical advice was given to fifteen fish farmers who called on CIFRI with various problems encountered by them in induced breeding, air-breathing fish culture and composite fish culture of Indian and exotic carps. A total of 81 ponds belonging to these farmers are under fish culture. Besides, 14 enterprising fish farmers, private agencies and Govt. agencies were benefited by the

advisory service of the Extension Section through correspondence.

Extension lectures

Three lectures were delivered by CIFRI's extension personnel on the occasion of the training conducted by the Netaji Subhas Cooperative Training College, Kalyani, Fish Farmers' Day at JARI and the workshop on Agricultural Financing organised at Narendrapur by United Commercial Bank.



Inside the CIFRI pavilion at Uttarbanga Krishi Mela

Visitors

*Dr. Christopher Copeland at
CIFRI*

Dr. Christopher Copeland, College of Fisheries, Seattle University of Washington visited the Institute during 16-21 June 1981. He held discussion with Dr. A. V. Natarajan, Director, CIFRI, on various matters relating to carp polyculture, sewage-fed fish culture, paddy-cum-fish culture, duck-cum-fish culture, etc. He also made enquiries whether bottlenecks were experienced in dissemination of technologies to fish farmers.

Dr. Copeland visited Rahara Research Centre of the Institute and acquainted himself with the progress of work registered in that Centre in the field of sewage-fed fish culture and paddy-cum-fish culture. His programme in India also included visits to Freshwater Aquaculture Research & Training Centre,

Dhauri and Pond Culture Division, Cuttack.

FAO Team at Kakdwip Research Centre

An FAO team on Coastal Engineering Project comprising Dr. Kovari, Mr. Pedro Patlan and Mr. Bhakla visited Kakdwip Research Centre of the Institute on 31 May, 1981. They visited the farm and held detailed discussion with the Officer-In-Charge, Shri D. D. Halder and other scientists. The Officer-In-Charge explained to the visitors the engineering details of the farm.

FAO/UNDP Consultants Visit CIFRI

Drs. N. Fijan, Fish Pathologist, Janos Bakos, Fish Geneticist and R. K. W. Chow, Fish feed Technologist visited CIFRI under FAO/UNDP programme for three months each. Dr. T. V. R. Pillai, FAO expert in fisheries visited the Institute for three days from 17.5.81 to 20.5.81 and held

discussion with the Director about UNDP Project.

Other distinguished visitors

Dr. D. R. Umali, FAO Regional Representative for Asia and Pacific visited CIFRI for two days to apprise himself of the Institute's activities. Dr. Charles Editor, Director, Centre of Development Studies University of Wales, U. K., paid a visit to CIFRI and explored the possibilities regarding collaboration between CIFRI and University of Wales in the field of fish genetics. Drs. F. Y. Chen, and Dr. T. Chua attended the Research Council meeting. Dr. Schnillen, catfish culture specialist from Auburn University discussed the possibility regarding initiation of a project on catfish culture. He also delivered a talk on catfish culture technology. The talk was organised by the Inland Fisheries Society of India. □

Dr. A. T. Dudani, Scientist (LLP), Indian Council of Agricultural Research, accompanied by Shri P. Chatterjee, Programme Officer, LLP, Zone-II visited the Institute on 6th May, 1981. They discussed the progress of the Lab to Land Programme at Central Inland Fisheries Research Institute with Shri P. Das, Coordinator. They have also visited the Lab to Land field centre at Kalyanbati, Chanditala in the District of Hooghly West Bengal and exchanged views with the fish farmers. Dr. Dudani and Shri Chatterjee were deeply impressed by the progress achieved under Lab to Land Programme.



Manpower development

Under the FAO/UNDP Scheme Mr. R. M. Rao, Scientist-1 proceeded to Philippines on 29.4.81 to undergo training in aquaculture for a period of one year. The successful completion of this training course will also enable him to obtain M. Sc. degree (Aquaculture) from Philippines University. □

S/Shri S. P. Singh, S. K. Wishard, K. N. Krishnamurthy and Dr. S. K. Mukhopadhyay completed the one month orientation course in Agricultural Research Management on 6th May, 1981. Four more CIFRI scientists are included in the next batch of the course conducted for S-1 scientists by National Academy of Agricultural Research Management, Hyderabad. They are S/Shri M. Ramkrishnaiah, K. K. Bhanot, S. N. Dutta and S. B. Saha. □

Dr. Babulal, S-1 attended a three months' training course in 'Use of Isotopes and Radiations in Agriculture and Biology' conducted by Nuclear Research Laboratory, Indian Agricultural Research Institute, New Delhi during March 3—June 2, 1981. □

Mr. Ansuman Hazra, Scientist (Bio-chemistry) participated in the Summer Institute on 'Nontraditional Diversified Fish Products and Byproducts' sponsored by ICAR. The Summer Institute was held at

Central Institute of Fisheries Technology, Cochin during April 27 to May 26, 1981. □

Mr. B. N. Saigal and Dr. V. K. Unnithan attended one week 'Management Course in Reprography' conducted by Indian Association for Special Libraries & Information Centres, Calcutta in the premises of Indian Statistical Institute from 25 to 30 April, 1981. □

Mr. V. V. Sugunan, S-1, participated in the fifteenth 'National Course on Information Storage and Retrieval System' at Small Industries Extension Training Institute, Hyderabad from 1-26 June, 1981. □

CIFRI Participated in workshop

CIFRI was represented by Mr. S. Paul, Scientist-1 in a workshop of 'All India Fishermen's Cooperative Federation Ltd.' held at New Delhi during 17-18 June, 1981. Problems pertaining to revitalisation of cooperative structure, cooperatives and NCDC and fisheries cooperatives during Vth plan were discussed at length among delegates and invitees. The occasion was also marked with the release of a souvenir which contained a contribution by Dr. A. V. Natarajan and S. Paul, titled as "Post independence trends in fisheries cooperatives and their relevance in India". The CIFRI representative also acted as a member of the drafting committee that framed recommendations to be forwarded to the Government of India.

STAFF NEWS

Pillai and Pathak awarded Ph. D.

Mr. S. Madhusudanan Pillai, S-1 of the Institute has been awarded the degree of Doctor of Philosophy in Zoology by the Annamalai University (Tamil Nadu) for his thesis entitled 'Histophysiological Studies of the Thymus in *Rachophorous maculatus* (Grey).

Mr. Vibhakar Pathak, S-1 of the Institute has also been awarded the degree of Doctor of Philosophy in Chemistry by Ranchi University, Bihar. His subject of investigation leading to the degree was 'Evaluation of productivity on Nagarjunasagar Reservoir as a Function of Hydrobiological and Limno-chemical Parameters'

STAFF NEWS

Scientists promoted to the next grade through five-yearly assessment

Name	Promotion		Discipline	With effect from
	From	To		
1. Shri S. D. Tripathi	S-2	S-3	Fish & Fishery	1.7.1977
2. Shri P. Das	S-2	S-3	Science	1.7.1978
3. Shri K. Raman	"	S-3	"	1.7.1978
4. Dr. (Mrs.) T. Rajyalakshmi	"	S-3	"	"
5. Shri G. V. Kowtal	S-1	S-2	"	"
6. Shri S. P. Singh	"	S-2	"	"
7. Shri R. D. Prasadani	"	S-2	"	"
8. Shri C. Selvaraj	"	S-2	"	"
9. Shri S. K. Mukhopadhyay	"	S-2	"	"
10. Shri R. K. Jena	"	S-2	"	"
11. Dr. N. K. Thakur	"	S-2	"	"
12. Shri V. R. Desai	"	S-2	"	"
13. Dr. C. R. Das	"	S-2	"	"
14. Shri M. R. Sinha	"	S-2	"	"
15. Shri A. V. P. Rao	"	S-2	"	"
16. Shri S. C. Pathak	"	S-2	"	"
17. Dr. P. U. Verghese	"	S-2	"	"
18. Dr. K. K. Vass	"	S-2	"	"
19. Dr. B. N. Singh	"	S-2	"	"
20. Shri K. N. Krishnamurthy	"	S-2	"	"
21. Shri R. M. Rao	"	S-2	"	"
22. Dr. K. J. Ram	S	S-1	"	1.7.76
23. Shri D. K. Kaushal	"	S-1	"	1.7.78
24. Shri B. K. Banerjee	"	S-1	"	"
25. Shri D. R. Kanujia	"	S-1	"	"
26. Shri R. K. Dey	"	S-1	"	"
27. Shri M. P. S. Kohli	"	S-1	"	"
28. Shri Amitabh Ghosh	"	S-1	"	"
29. Shri D. K. De	"	S-1	"	"
30. Shri Shree Prakash	"	S-1	"	"
31. Shri R. N. Seth	"	S-1	"	"
32. Shri S. N. Singh	"	S-1	"	"
33. Shri R. K. Dwivedi	"	S-1	"	"
34. Dr. V. Pathak	"	S-1	Agriculture Chemistry	1.7.79
35. Dr. K. Chandra	"	S-1	"	"
36. Shri R. K. Singh	"	S-1	Soil Science	"
37. Shri H. C. Karmakar	"	S-1	Agril. Statistics	"
38. Shri R. K. Tyagi	"	S-1	"	"

Scientists awarded advance increments

Name	Designation	No. of increments	With effect from
Shri A. K. Ghosh	S-1	2	1.7.1978
Shri D. K. Chatterjee	S-1	2	1.7.1979
Shri S. N. Mohanty	S	2	1.7.1976
Shri D. Kapoor	S	2	1.7.1976

The following transfers were made during May-June 1981

Name	Designation	From	To
Shri M. Sinha	S-2	Barrackpore	Kalyani
Shri Dhirendra Kumar	S-1	Barrackpore	Patna
Smt. S. Sivakami	S-1	Bhavanisagar	Bangalore
Shri H. C. Joshi	S-1	Mazaffarpur	Barrackpore
Shri S. Jena	S-1	Cuttack	Bhubaneswar
Shri N. M. Chakraborty	S	Kakdwip	Khardah
Shri K. C. Pani	T-1	Cuttack	Bhubaneswar
Shri S. C. Mondal	Supporting Staff	Kakdwip	Lalgola

Shri Malhotra retires

On attaining the age of superannuation Mr. J. C. Malhotra, Scientist-3 and Head, Riverine and Lacustrine Division, CIFRI retired from the ICAR services on 31st May, 1981. He completed a fruitful scientific career of 33 years in CIFRI. As a fishery biologist and as an expert in riverine fisheries, Mr. Malhotra is well-known among fishery scientists. He is also the recipient of the coveted Rafi Ahmed Kidwai Memorial Prize for the biennium 1978-79 for his outstanding work on hilsa fisheries. The CIFRI Staff wish him a worthy retired life.

Dr. A. G. Jhingran takes over as Head of Riverine and Lacustrine Division

Consequent to the retirement of Shri J. C. Malhotra, Dr. Arun Gopal Jhingran, Scientist-3 has been appointed as the Head, Riverine and Lacustrine Division, CIFRI. Dr. Jhingran's contributions pertain to the field of fishery biology and riverine fisheries. □

Shri Budhi Bahadur, supporting staff Grade-III on attaining the age of superannuation retired from the active services of CIFRI on 30th June, 1981. He had joined CIFRI as a watchman and rendered 25 years of service in this Institute. CIFRI Staff wish him a happy retired life.

Matrimonial

Congratulations, Anup—
ANUP KUMAR DATTA (S-1) married ATOSI on 11th June, 1981. CIFRI Newsletter wishes them what they wish — *A happy married life.*

CLUB CORNER

CIF Recreation Club Plans for the Next Year

The annual General Body meeting of the CIFR Club was held on 30th June, 1981 in the CIFRI auditorium. The performance of Club during last year was reviewed

and a tentative programme for the year 1981-1982 was outlined. The following persons were elected unanimously to serve on various committees of the Club during the coming year :

President :
Vice-President :
Joint Secretaries :
Cultural Secretary :
Subcommitte members :

Sports Secretary :
Subcommittee members :

Library Secretary :
Subcommittee members :

Treasurer :

Dr. A. V. Natarajan
Shri L. M. Nandi
S/Shri K. C. Roy and D. K. De
Shri B. C. Dutta
S/Shri M. K. Das, D. C. Bose
and U. K. Ghosh
Shri P. K. Ghosh
S/Shri R. N. Mahato, Ashok Saha
and R. R. Mukherjee
Shri K. P. Nath
S/Shri H. K. Sen, A. P. Mukherjee
and Samar Ghosh
Shri Tarun Roy

Trout project launched in Himachal Pradesh

The Government of Himachal Pradesh has launched an ambitious Rs. 4.62 million project to develop commercial trout farming at Katrain in Kulu village with financial and technical aid from the Danish Government. Thirty tons of trout feed along with the pelleting plant will be imported. Targeted production for trout in 1981 is 10 tons and this will be raised by a similar quantity yearly to reach the States' demand for fish in three years. The States' annual seed requirement is 1.2 million against the present available capacity of 60,000.

World Bank-aided hatcheries

The World Bank is financing the construction of fish hatcheries in five states viz., Bihar, Madhya Pradesh, Orissa, Uttar Pradesh and West Bengal. The total amount of aid is Rs. 397 million (£ 20.75 million). This is in addition to a bank loan of Rs. 172 million.

—Fish Farming International

Department of Environment to study fish migration

In view of the economic and nutritional benefits of pisciculture a working group of the Department of Environment, Govern-

ment of India is evolving designs for mechanised lifts to be built into high dams to permit movements of migratory fishes across these dams to their breeding grounds. A map of major river systems in the country indicating breeding grounds and migratory routes of important species of fish is also being prepared.

—IAWPC Newsletter

Summer Institute on Integrated Farming Systems

A Summer Institute on 'Farming Systems Integrating Agriculture, Livestock and Fish Culture' is being conducted at CIFRI under the auspicious of ICAR. Deliberations of the Summer Institute include lectures by subject matter experts, field trips and discussions related to the concepts of integrated farming systems.

CIFRI's work on freshwater prawn breeding extolled

Shri P. V. Jayakrishnan, Chief Secretary, Government of Pondicherry visited the Prawn Breeding Unit of CIFRI at Kakinada on 4.5.1981. He desired to establish a hatchery in his state. He wrote in the visitors' book: *Today's visit was an eye opener to the great potential in the field of prawn culture in freshwater. Very good work is being done here. I am keen that similar work is also taken up in Pondicherry.*

CIFRI's Training Programme commended

Fisheries authorities of Sikkim have paid glowing tributes to the Central Inland Fisheries Research Institute for offering a week-long training programme on "Frog breeding, rearing and management" at Kalyani Research Centre. In a letter to Dr. A. K. Mondal, Officer-in-Charge, Frog Research Centre, Kalyani, West Bengal, P. W. Bhutia, Assistant

Fisheries Development Officer, Sikkim and S. T. Lepcha, Sub-Inspector of Fisheries, Sikkim expressed the view that the CIFRI technologies were so simplified that they could learn satisfactorily the various aspects of frog breeding and rearing within a week's time. They narrated the successful adoption of the techniques in their farm at Sikkim, wherein they could produce about 1,10,000 tadpoles in two trials.

.....and VIEWS

LIBRARY

New arrivals

BOOKS :

Report of National Commission on Floods, Volumes 1 & 2 March 1980

Kendall, Robert L. ed.

Controlling seepage losses from irrigation canals - World-wide survey, 1967

World-wide survey of experiments and results on the prevention of evaporation losses from reservoirs (Revised edition—1967)

Framji, K. K. ed.

Design practices of irrigation canals in the world, 1972

Drainage construction techniques for vertical/tubewell drainage

Canal construction—Open channels construction—Machinery and techniques

Proceedings of Symposium on Water Resources System Planning with Special Reference to Irrigation, Drainage and Flood Control, Varna - May, 1972

Sahai, Baldeo

Public relations—A scientific approach

Lahlou, B. ed.

Epithelial transport in the lower vertebrates : Proceedings of the Memorial Symposium to Jean Maetz held at the station Zoologique of Villefranchesur-Mer, 26-27 June 1978

The new Encyclopaedia Britannica in 30 volumes : Macropaedia : volumes 1-19

The new Encyclopaedia Britannica in 30 volumes : Micropaedia Volume I-X : Ready reference and index

The new Encyclopaedia Britannica in 30 volumes. Propaedia : Outline of knowledge and guide to the Britannica.

Ciaccio, Leonard L. ed.

Water and water pollution handbook, Volumes 2 & 3

Mather, Kenneth & John L. Jinks

Biometrical Genetics : The study of continuous variation. Second edition.

Holme, N. A. and A. D. McIntyre ed.

Methods for the study of marine benthos. IBP Handbook No. 16

Rubinow, S. I.

Introduction to mathematical biology

Klotz, Irving M.

Energy changes in biochemical reactions

Oglesby, Ray T., Clarence A. Carlson and James A. McCann ed.

River ecology and man : Proceedings of an International Symposium on River Ecology and the Impact of Man, held at the University of Massachusetts, Amherst, Massachusetts, 20-23, 1971

Furtado, J. I. ed.

Tropical ecology and development : Proceedings of the V International Symposium on Tropical Ecology, 16-21 April 1979, Kuala Lumpur, Malaysia. Parts 1 & 2.

Everhart W. Harry and William D. Youngs

Principles of fishery science. Second edition.

ON THE ANVIL-2

Fish culture in Sewage-fed Ponds

Experiments are in progress at CIFRI to develop a package of practices utilizing domestic sewage effluents for nursery rearing and rearing of fish to marketable size in stock ponds. Work carried out at the Institute over the past decade have led us to varying promising results. Under the monoculture experiments with tilapia, a production of 9,350 kg/ha/yr was obtained from sewage-fed culture ponds without resorting to additional fertilization or supplementary feeding. In mixed culture experiments with Indian and exotic carps, from a 0.17 ha sewage-fed pond, net production of 5,711 kg, 6,972 kg, 5,402 kg and 7,200 kg of fish have been obtained per hectare per year. A growth of 195 g was recorded for magur in sewage-fed pond when introduced in

combination with male tilapia. Of all the species experimented, silver carp recorded the maximum growth rate (996.0 g in five months) in sewage-fed ponds.

At present, in the Institute's sewage-fed fish farm at Khardah (W. B.), the spawn and fry of Indian major carps and common carp are being reared at varying stocking densities (1-2 million/ha for spawn and 0.2-0.4 million/ha for fry). In some experiments, liming and supplementary feeding are also being tried for better results. The nutrient status and physico-chemical parameters of soil and water of experimental ponds are periodically assessed and monitored. Laboratory experiments in plastic pools with a view to establishing the relative efficiency of treated and untreated domestic wastes in enhancing fish production are progressing. In these experiments, soil-water ratio is kept constant and fertilization is done with raw

sewage, secondary sewage and sludge. The growth and survival of spawn, fry and fingerlings of carps at varying densities are under observation.

The Institute has also undertaken investigations on the aetiology and control of parasitic diseases in fishes reared in sewage-fed farms. The identification of prevalent fish diseases and fish parasites in sewage-fed ponds and establishing the weak links of parasites for their control are under the purview of the investigation. This research topic also envisages the estimation of the right dosages of chemicals and pesticides to control their

diseases. The lethal dose and cumulative effect of these chemicals on fishes are also under investigation. This project is undertaken in view of the general fear that the fishes cultured in sewage-fed water are more prone to diseases. □

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Sewage is a foul smelling fluid arising out of domestic wastes. Sometimes trade wastes are also mixed with domestic sewage. Sewage is 90-99.9% water. The rest are floating solids, fats, greese, bacteria etc. Sewage also contains synthetic detergents. It has been found to contain traces of zinc, copper, chromium, manganese, nickel and lead. Sewage is regarded to be a rich fertilizer with nitrogen and phosphorus as its main chemical constituents along with other growth promoting substances. □

According to the draft status report on utilization and recycling of water by National Commission on Science and Technology, Govt. of India, the sewered population is 7% and the total volume of sewage available in the country is estimated as 3,637 million litres per day. This contains about 90 tons of N, 32 tons of P_2O_5 , 55 tons of K_2O and 1,380 tons of organic matter. The value works out to be Rs. 6.10 crores annually. □

Fish raised in sewage water ponds can be marketed for human consumption. But in some areas or communities,

there will be aesthetic or other objections, including fears of contamination especially if there is no proper treatment or control of water. In such case, the fishes could be suitable for reduction to meal. It is estimated that a 50 ha sewage farm (producing tilapia) could be able to support a plant turning out about 500 tons of meal a year having an average production of, say, 90 tons/ha/yr of the farm.

—Fish Farming International. □

The concept of using sewage in fish culture is very much relevant in the context of recycling the waste materials of every conceivable form. Sewage when applied to fish ponds cuts down the operational cost to a considerable extent by substituting the scarce chemical fertilizers and costly feeds. In West Bengal alone, the sewage-fed fishery resources are to the tune of 88,000 ha with an annual estimated fish yield of 2,225 kg/ha/yr. The fish production reported from the moats at Vellore, Webster, Chingelpet, Arni etc. in Tamil Nadu varies from 1000 - 5,486 kg/ha/yr. □

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