



CIFRI

NEWSLETTER

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BREAKTHROUGH IN RIVERINE CATFISH BREEDING

The Institute succeeded in breeding the riverine catfish, *Wallago attu* through artificial fecundation. This is the first ever successful attempt in breeding this highly prized fish which reaches giant size in rivers.

The breeders of *W. attu* were collected from Linganamakki reservoir at Bidurmatta (Karnataka) during 13th to 18th June 1985 by operating cast nets. They were transported alive to a pool made temporarily in a rivulet by erecting a dyke. Breeder sets were released in hapas pitched in the pools. Due to shortage of males, breeding pairs comprising one male and one female were released into the hapas. Altogether 13 sets were tried on 19th and 21st June 1985. The size/wt of the brooders varied from 622 mm/1.20 kg to 758 mm/2.90 kg for females and 575 mm/1.10 kg to 756 mm/2.90 kg for males. The pituitary extract was administered in two doses with an interval of six hrs in between for females and a single dose to males at the time of second injection to females. The doses administered for females were

3+12 (one fish); 3+20 (one fish); 5+12 (two fishes); 5+15 (four fishes) and 5+20 (three fishes) mg kg⁻¹ body weight. The doses for males were 3 (two fishes) and 5 (9 fishes) mg⁻¹ body weight. Altogether, eight sets showed positive results with different doses. The female receiving 3+20 mg dose did not evoke any response. One female each in 5+12 mg and 5+20 mg dose category also failed to spawn.

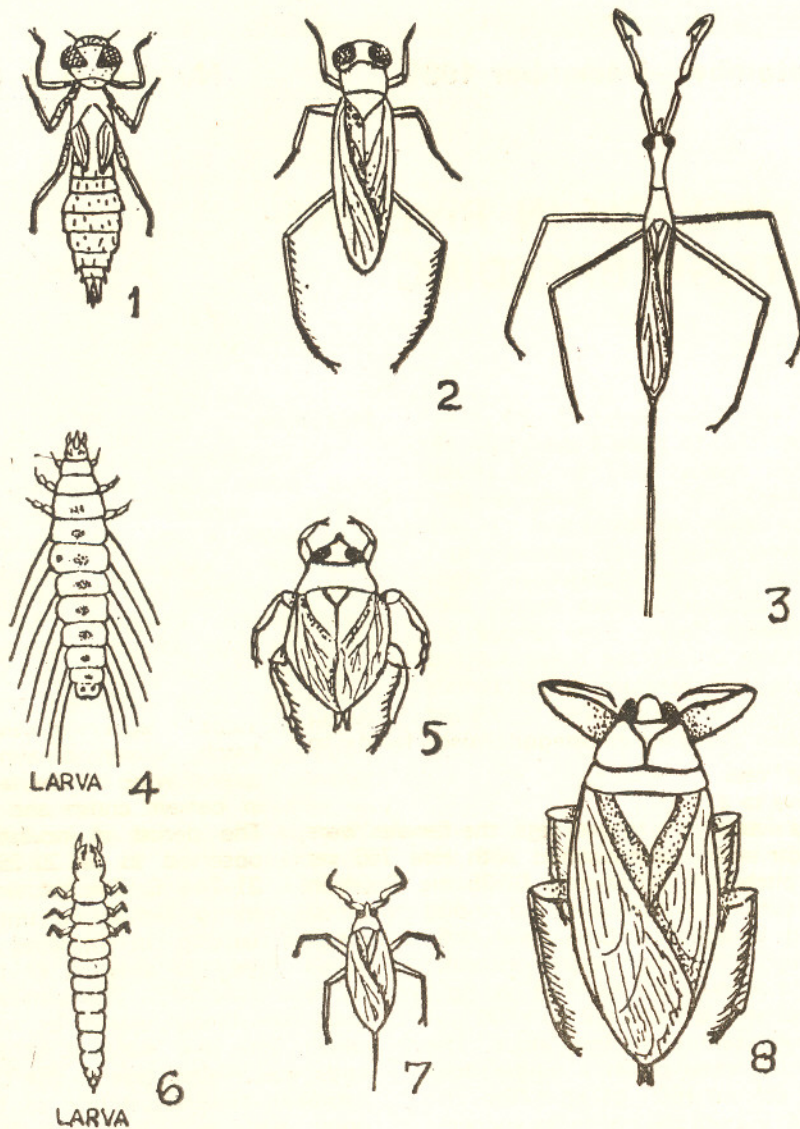
In two sets, the females were administered with Hoe 766 vet (containing 0.525 mg Buserelin acetate corresponding to 0.500 mg Buserelin antimicrobial mixture; 10.0 mg benzyl alcohol) at a dose of 0.3 ml (150 µg) kg⁻¹ and after 6 hrs a 0.2 ml (100 µg) progesterone as final dose. The males were given a single dose of 0.1 ml (50 µg) kg⁻¹ Hoe 766 vet. In both the instances successful spawning occurred.

A total of 28,995 developing eggs (ranging from 1,240 to 6,200 eggs set⁻¹) were obtained from these two days operation. The fertilization of eggs varied from 23 to 51%.

Hatching

The fertilized eggs of *Wallago attu* were found to be highly adhesive. Hence, when hatching was tried in the turbid pool, sediment particles gathered around the shell and rapid fungal development observed. Moreover the eggs remained clumped together. Consequently only 310 hatchlings were obtained from 11,076 eggs. However 90% hatching was observed when spawn were allowed to develop in cement cistern and in trays. The period of incubation was observed to be 22-26 hrs at 21-24.6°C. The hatchlings were transported to Bangalore under oxygen packing. In a period of seven days, the survival of the fry was only 11%. The survived ones are being reared in nurseries. The low survival of the eggs was mainly due to the unforeseen adhesive nature of the eggs and inadequate facilities available at the breeding site. Nevertheless, the results of the breeding experiments are highly encouraging. Successful breeding of *W. attu* under captivity paves the way for its commercial production and culture technology.

NEW LIGHT ON PREDATORY EFFICIENCY OF AQUATIC INSECTS ON FISH HATCHLINGS



A few predatory insects harmful to fish spawn/fry inhabiting freshwater bodies.

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|---------------------------------|------------------------------|
| 1. <i>Anax</i> sp. | 2. <i>Anisops</i> sp. |
| 3. <i>Ranatra elongata</i> | 4. <i>Berosus indicus</i> |
| 5. <i>Diplonychus annulatum</i> | 6. <i>Halochares</i> sp. |
| 7. <i>Laccotrephes ruber</i> | 8. <i>Lethocerus indicus</i> |

Observations on predatory nature of a few aquatic insects indicate that their predatory efficiency on carp hatchlings varies widely from insect to insect and is directly correlated to their life cycle stages. In certain cases, contrary to the earlier reports, the younger nymphs are more destructive to hatchlings than the older nymphs or adult insects.

The 1st and 2nd instar nymphs of *Diplonychus annulatum* consumed an average of about 10 hatchlings (1-3 days old; 5-7 mm size) in 24 hrs. This predation rate is 2½ times more, compared to that of later larval stages and adults of the insect. The insect from 3rd instar to adult stage preferred only bigger hatchlings of 10-15 days age (15-25 mm) while fish fry bigger than 25 mm size usually remained unaffected by the insect.

Ranatra filiformes was harmful only from 4th instar stage. The predatory capacity of the nymphs and adult were the same. The adults of *Anisops* sp. was found to be enormously destructive to hatchlings. Even when the insect was content with predation, it continued to harm the hatchlings causing injuries and death. The damage was to the extent of 25 hatchlings of 2-4 days age in 24 hrs.

Aquatic insects are characteristically abundant in freshwater bodies. While many are extremely harmful and cause heavy mortality of the spawn and newly emerged hatchlings in ponds, a number of them constitute an important food item to many carnivorous fishes. Survey of a

freshwater pond at Barrackpore showed that about 42 species of insects belonging to seven diverse orders, viz., Ephemeroptera, Odonata, Hemiptera, Coleoptera, Trichoptera, Lepidoptera and Diptera occur throughout the year though their abundance varies depending upon the season.

Among them, the nymphs and adults of several families (Belostomatidae, Notonectidae and Nepidae) of Hemiptera, larvae belonging to certain families (Dystiscidae, Hydrophyllidae and Gyrinidae) of Coleoptera and a few naiads of Odonata are known to be predators of young fishes in nursery ponds.

HIGH DENSITY FRY REARING OF MRIGAL

A technology to harvest 11-17 million fry of *Cirrhina mrigala* per hectare per crop of 15 days was developed at the Rahara farm of the Institute. The package comprises application of poultry manure @ 5 t/ha to generate high density zooplankton followed by application of sumithion @ 2.5 ppm to kill off selectively the larger zooplankton and make available only smaller zoop-

lankton for the tender hatchlings.

Feeding was done for the initial two days with microencapsulated chicken egg feed @ 5% of the initial body weight. At a stocking density of 37.5 million hatchlings/ha, survival ranged from 30-45%. The new approach will go on long way to augment seed production in the country with limited farm facilities.

EXTENSION

The important activities of the Extension Section of the Institute during September - December 1985 were the following:

Advisory Services

Necessary advices were rendered to 45 farmers who owned about 60 ponds. In addition, 8 Government agencies and 2 educational institutions were also provided advice on aquaculture. The varying aspects covered

under this service were composite fish culture; tilapia culture; prawn-cum-fish farming; air-breathing fish culture; control of algal bloom, weeds and molluscs in fish ponds and control of fish mortality. Informative leaflets were also supplied to many farmers.

Visitors briefed

Visits to the Institute, its farms and centres were arranged for

32 students, 45 trainee officers and 253 farmers. The visits exposed them to the recent advances made in scientific fish husbandry practices.

Training programmes

The section conducted the following four training programmes during September-December, 1985.

Sl: No.	Duration	Topic	Participants
1.	10-13 Sept. '85	Integrated fish-livestock farming	4 extension workers from Arunachal Pradesh
2.	8-17 Oct. '85	Carp culture	30 farmers of Garia Unemployed Youth Fishermen's Co-operative Society, Garia (W.B.)
3.	8 Nov. '85	-do-	6 farmers from Assam
4.	19-29 Nov. '85	-do-	21 farmers of Garia Unemployed Youth Fishermen's Co-operative Society Garia (W.B.)

Talks

The scientists of the Extension Section delivered 8 extension lectures to as many groups of fish farmers.

Group discussions

The extension scientists took part in two group discussions on fish farming, one at village Seakhala in Chanditala II block and another at village Bandipur, Hooghly district. A total of 45 farmers took active part in discussions.

LAB TO LAND PROGRAMME**A FARMER'S EXPERIENCE**

Shri T. Narayana, a farmer serving as a Labour Inspector in the Dept. of Labour, Karnataka took to fish farming in the year 1980-81 through the ICAR sponsored Lab to Land Programme. He took up air-breathing fish culture in a 0.15 ha shallow derelict pond under the guidance of CIFRI scientists at Bangalore Centre, netting out a profit of Rs. 1,200/- in the first attempt and over 1,000/- in the second.

Armed with the confidence gained in fish culture technology, Mr. Narayana went on to build a carp and air-breathing seed farm of his own. He also acquired a seasonal tank (area 26 ha) adjacent to his farm, on lease from the Department of Fisheries, Karnataka in 1981 by open

auction-cum-tender. Even after paying Rs. 11,000/- as lease and 75% of lease amount as cess every year in addition to the input costs, he makes a profit of Rs. 40,000/- to 60,000/- every year from these fishery operations. Today Mr. Narayana is a full-time fish farmer. He owns a full set of fishery equipments. He shares his experience as an entrepreneur in aquaculture with several agencies, such as

Asian Rural Development Forum, Institution of Agricultural Technologists, Karnataka State Fisheries, etc. He is a widely recognised progressive fish culturist in Karnataka. Mr. Narayana has no hesitation to acknowledge his obligations to CIFRI scientists and Council for ushering him to this enterprise through Lab to Land Programme and exposing him to the aquaculture technologies.



Shri T. Narayana at his fish farm in a discussion with Dr. S. P. Ayyar, Fishery Scientist of the Institute

MANPOWER DEVELOPMENT

• **Dr. V. R. P. Sinha**, Head, FARTC, Dhauli and National Project Director, FAO/UNDP Project completed a study tour programme for 15 days to Thailand, Malaysia and Indonesia. During

his tour, Dr. Sinha visited several fish farms; fisheries laboratories and institutions and held discussions with several fisheries officials and experts of the region. The tour programme was spon-

sored by FAO/UNDP under a country programme 'Intensification of Freshwater Fish Culture and Training.'

● **Shri A. K. Sahu**, Scientist at FARTC, Dhauli was trained for six months (1.8.85 to 31.1.1986) on **reproductive physiology** at Marine Research Laboratory, Mennorial University of New Foundland, Canada.

● **Shri R. K. Das**, Scientist at Barrackpore attended a course sponsored by Unive sity Grants Commission on **Recent advances in Biotechnology and Biochemical Engineering** organised by the Department of Food Technology & Biochemical Engineering, Jadavpur University.

The course conducted during 25.10.85 to 15.11.85 included topics like microprocessors in fermentation control, recent advances in genetic engineering, immunology, tissue culture, environmental engineering and fermentation technology.

HONOURS AND AWARDS

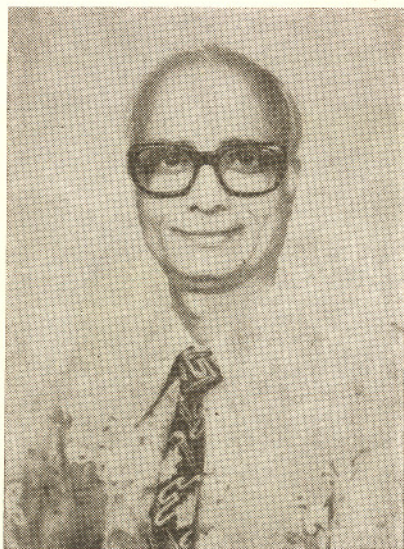
Ph.D. AWARDED

● **Shri A. K. Chattopadhyay**, Training Associate, KVK, Kakdwip obtained his Ph.D. degree from Visva-Bharati University, Santiniketan. His thesis on **Efficacy of herbicides to control weeds and reduce their competition for nutrients in transplanted rice** indicated that application of oxadiazon @ 0.5 and 0.6 kg ai/ha bottle shaker was most effective in suppressing weed population and weed dry weight in paddy plots. Consequently there was more availability of nutrients (NPK) to the transplanted rice. Oxadiazon was followed by butachlor (G) @ 2.0 kg ai/ha, nitrofen (G) @ 2.0 kg ai/ha, sequential application of fluchloralin (EC) @ 0.75 kg ai/ha and bentazon @ 1.0 kg ai/ha in that order as effective herbicides in agroecologically subhumid lateritic soil tract of West Bengal.



Dr. A.K. Chattopadhyay receiving the degree from Prime Minister Rajiv Gandhi, who is also the Chancellor of Visva-Bharati University.

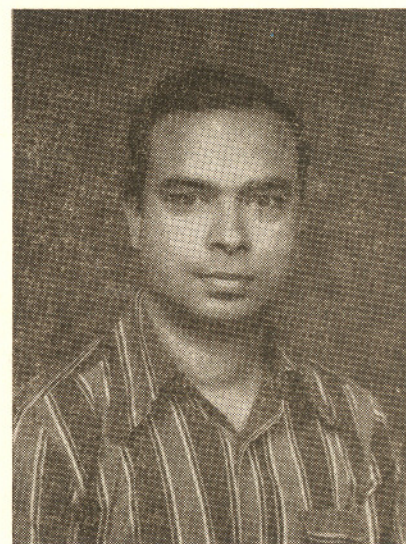
● **Shri M. D. Pisolkar**, Scientist at Pune Centre has been awarded Ph.D. degree by the Poona University for his thesis '**Fishery and biology of *Tor tor* (Hamilton) from Govindgarh lake, Madhya Pradesh.**'



Dr. M. D. Pisolkar

In his thesis, Dr. Pisolkar has highlighted the importance of mahseer fishery in large water-bodies both in commercial as well as sport fisheries points of view. The detailed biological aspects of *Tor tor* in Govindgarh lake and a key to the identification of mahseers are spelt out in the thesis. The environmental and limnological variables of the lake are correlated with the biology and fishery of the species.

● Sri Venkateswara University, Tirupati (A.P.) has conferred the degree of Doctor of Philosophy on **Shri C. P. Rangaswamy**, for his thesis entitled **Impact of endosulphan toxicity on some physiological properties of the blood and aspects of energy metabolism of a freshwater fish *Tilapia mossambica* (Peters).** In his study Dr. C. P. Rangaswamy employed endosulphan, an insecticide of organochlorine group at lethal and sublethal doses to ascertain its impact on haematological parameters such as cation and



Dr. C. P. Rangaswamy

anion concentrations; quantitative changes in total protein, free amino-acids and total lipid; RBC count, haemoglobin and haematocrit (PCV) and oxygen capacity and the O₂ uptake of the fish. The 96 h LC₅₀ was found to be 2.78 µg/l for the test fishes.

STAFF NEWS

Promotions/Appointments

● **Shri Ansuman Hajra**, Scientist-1 at Barrackpore Centre is appointed to the grade of S-2 (Biochemistry) w.e.f. 6th September, 1985 on the recommendation of Agricultural Scientists' Recruitment Board (ICAR), New Delhi.

● *On the recommendation of the Assessment Committee, the following technical staff of CIFRI are appointed to the next higher grade or granted advance increments as shown below:*

Sl. No.	Name & Designation	Promoted to/ No. of adv. increments	w.e.f.
1.	Shri J. P. Verma, T-6	Two increments	1.1.85
2.	Shri S. C. Moitra, T-2	T-1-3	1.1.85
3.	Shri A. K. Banerjee, T-2	T-1-3	1.1.85
4.	Shri B. K. Bahura, T-1	T-2	1.1.85
5.	Shri R. Tarai, T-1	One increment	1.1.85

Transfers

The following transfers were effected during September-December, 1985.

Sl. No.	Name & Designation	From	To
1.	Dr. M. D. Pisolkar, Scientist-2	Bilaspur	Pune
2.	Shri K. Gopinathan, Scientist-2	Pollachi	Madras
3.	Shri V. Kolekar, Scientist-1	Rihand	Pune
4.	Shri P. Prasad, Jr. Stenographer	FARTC, Dhauli	Madras
5.	Shri N. C. Mondal, T-1-3	Uluberia	Diamond Harbour
6.	Shri S. C. Burman, Fisherman	Allahabad	Krishnagar
7.	Shri K. P. Ram, Fisherman	Ranchi	Muzaffarpur
8.	Shri N. K. Das, Watchman	Digha	Calcutta

• **Shri B. Roy**, Scientist of CIFRI is appointed as Assistant Commissioner (Fisheries) in the Ministry of Agriculture (Department of Agriculture & Co-operation), Govt. of India in substantive capacities w.e.f. 1st October, 1984.

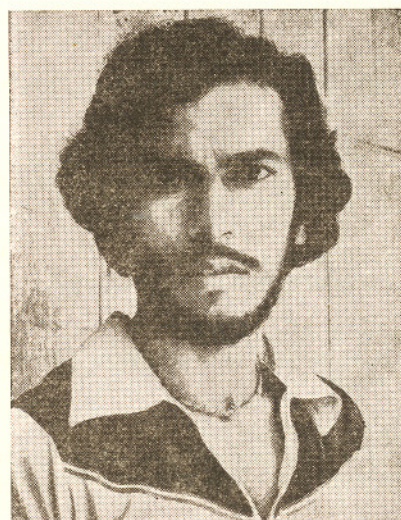
• **Dr. George John**, Scientist-2, at FARTC, Dhauli is relieved of his duties at CIFRI on 29.11.85 to join CMFRI, Cochin on an inter-institutional transfer.

• **Shri Gautam Pathak**, T-5 stands relieved of his duties at CIFRI on 31.1.86 on transfer to Jute Agricultural Research Institute, Nilgunj, Barrackpore, consequent to the shifting of ICAR Regional Committee No. II Headquarters to JARI.

SPORTS

CIFRI participated in the 5th ICAR East Zone Sports Meet held at Central Rice Research Institute, Cuttack during 23-27 September, 1985. A contingent of 46 athletes participated in the meet. The team secured third position among the seven institutes participated.

Shri Swapan Das of CIFRI was adjudged as the best athlete of the Zone for the year.



Sri Swapan Das

LIBRARY

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